06/28/12

PROJECT: 17BP.8.R.23

CONTRACT:

$$$$$$$SYSTIME$$$$$$
$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$$$USERNAME$$$$$

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.23	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
17.BP.8.R.23	——	PE
17.BP.8.R.23	——	R/W & UTIL.
17.BP.8.R.23	——	CONST.

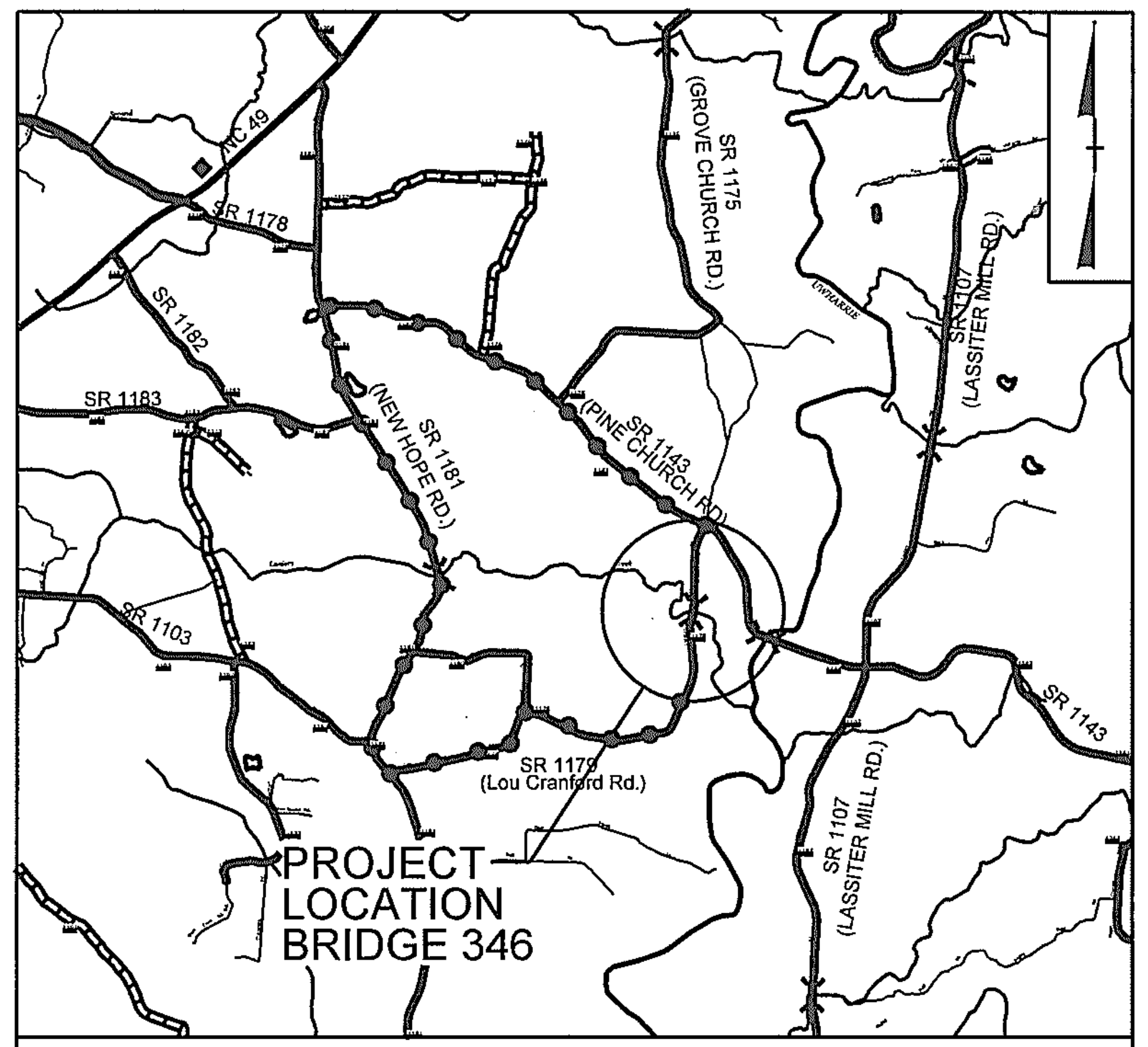
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional symbols
See Sheet 1-C For Survey Control Sheet

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

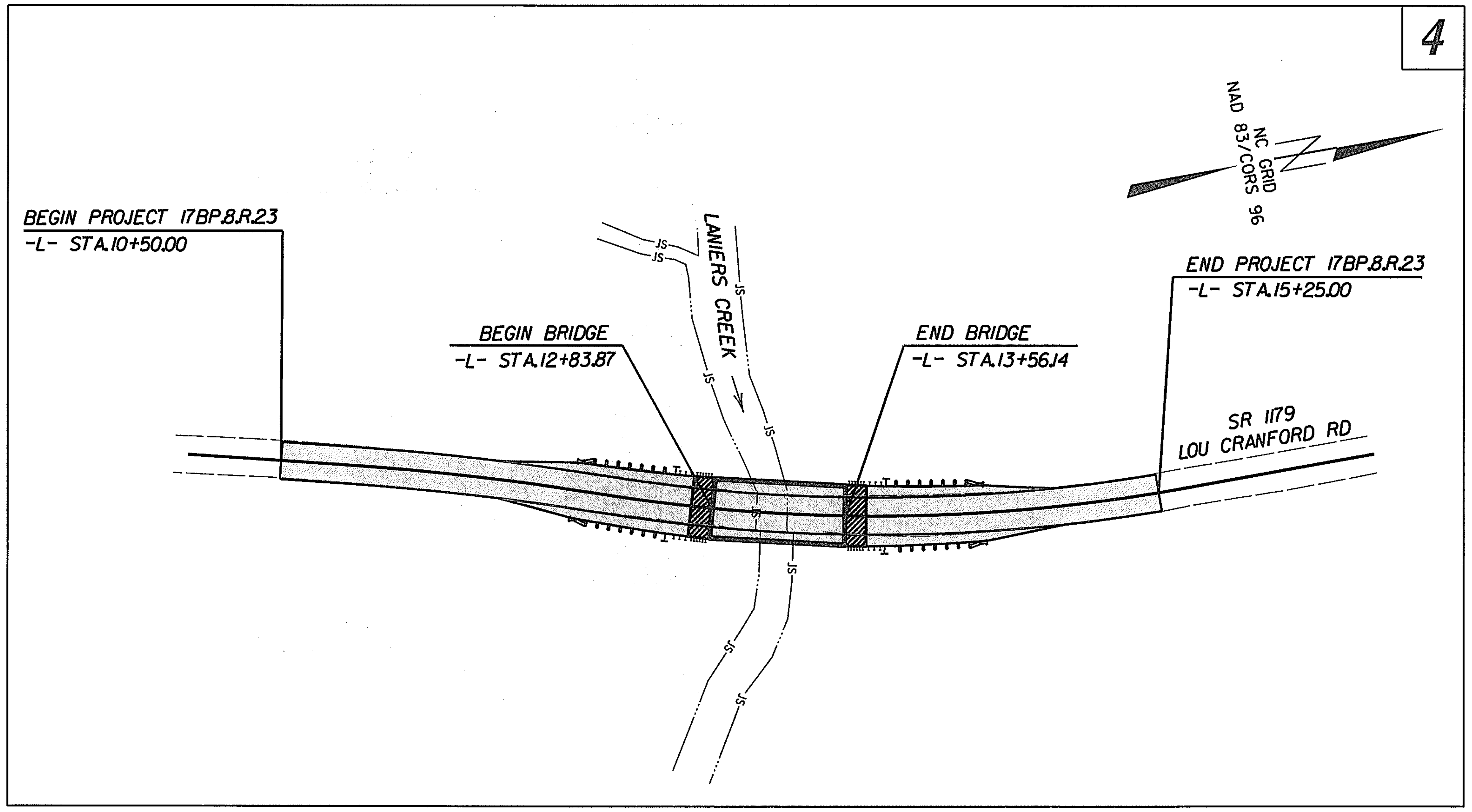
LOCATION: BRIDGE NO. 346 OVER LANIERS CREEK ON SR 1179 (LOU CRANFORD ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE



VICINITY MAP

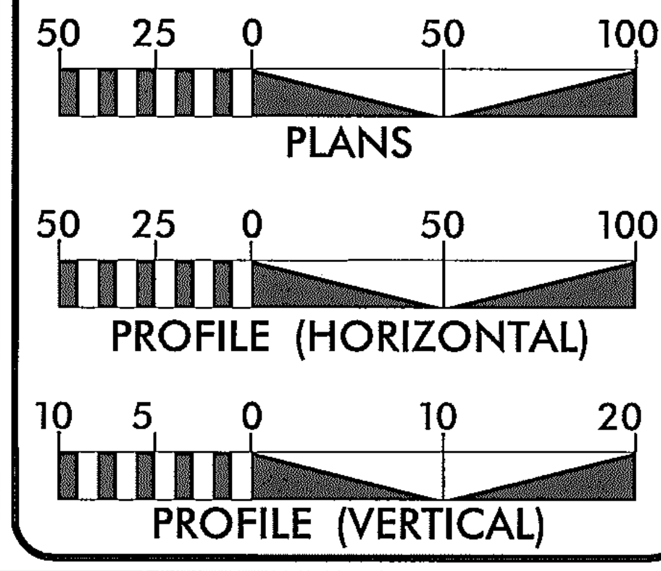
OFF-SITE DETOUR ROUTE
●—●—●—●—●—●



TO SR 1181

TO SR 1143

GRAPHIC SCALES



DESIGN DATA

ADT 2013 = 70
ADT 2033 = 100
D = 50 %
T = 8 % *
V = 45 MPH

FUNC CLASS = RURAL LOCAL
* TTST 3% DUAL 5%

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.8.R.23 = 0.076 MI
LENGTH OF STRUCTURE PROJECT 17BP.8.R.23 = 0.014 MI
TOTAL LENGTH OF PROJECT 17BP.8.R.23 = 0.090 MI

Prepared In the Office of:

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

FOR THE NORTH CAROLINA DEPT. OF TRANSPORATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
OCTOBER 22, 2013

DAVID CLODGO, PE
PROJECT ENGINEER

AGNIESZKA NAU, PE
ROADWAY PROJECT DESIGN ENGINEER

TIM WELCH, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SEAL 12786 STEVEN M. BONDOR

5-10-13
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SEAL 029712 AGNIESZKA J. NAU

05-10-13
SIGNATURE: P.E.

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	1-A

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
3	SUMMARY OF QUANTITIES
3A	DRAINAGE SUMMARY
3B	EARTHWORK SUMMARY, GUARDRAIL SUMMARY, PAVEMENT REMOVAL SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
SP-1	OFF- SITE DETOUR SIGN DESIGN
EC-1 THRU EC-4	EROSION CONTROL PLANS
X-1 THRU X-5	CROSS-SECTIONS
S-1 THRU S-15	STRUCTURE PLANS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 07/30/12

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
840.20	Frames and Wide Slot Flat Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

8/17/99

4:23:32 PM
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
jared.medlin

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
17.BP.8.R.23	1B

Note: Not to Scale

S.U.E. = *Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	━━━━
County Line	— - — - —
Township Line	— - - — - - —
City Line	— - - — - - —
Reservation Line	— · — · —
Property Line	━━ ━━
Existing Iron Pin	⊙ EIP
Property Corner	━━ ━━×
Property Monument	⊡ ECM
Parcel/Sequence Number	(123)
Existing Fence Line	—×——×——×—
Proposed Woven Wire Fence	——○——
Proposed Chain Link Fence	——□——
Proposed Barbed Wire Fence	——◇——
Existing Wetland Boundary	- - - WLB - - -
Proposed Wetland Boundary	—— WLB ——
Existing Endangered Animal Boundary	—— EAB ——
Existing Endangered Plant Boundary	—— EPB ——
Known Soil Contamination: Area or Site	— ☠ — — ☠
Potential Soil Contamination: Area or Site	— ? — — ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙ S
Well	○ W
Small Mine	⚒
Foundation	▭
Area Outline	▭
Cemetery	▭ †
Building	⊔
School	▭ ⚑
Church	▭ ✝
Dam	━━━━

HYDROLOGY:

Stream or Body of Water	—— ·· ——
Hydro, Pool or Reservoir	⌐ - - - ¬
Jurisdictional Stream	— JS — ··· —
Buffer Zone 1	—— BZ 1 ——
Buffer Zone 2	—— BZ 2 ——
Flow Arrow	←——
Disappearing Stream	>—— ·· ——
Spring	○∼∼∼
Wetland	⩡
Proposed Lateral, Tail, Head Ditch	≫≫≫ ← FLOW
False Sump	◇

RAILROADS:

Standard Gauge	┼┼┼┼┼ CSX TRANSPORTATION
RR Signal Milepost	⊙ MILEPOST 35
Switch	▭ SWITCH
RR Abandoned	—+— —+— —+—
RR Dismantled	————

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	—— —— —
Proposed Right of Way Line	——(R/W)——
Proposed Right of Way Line with Iron Pin and Cap Marker	—(R/W)——▲—
Proposed Right of Way Line with Concrete or Granite R/W Marker	—(▲)——(R/W)—
Proposed Control of Access Line with Concrete C/A Marker	—(△)——(C/A)—
Existing Control of Access	—— (C/A) ——
Proposed Control of Access	——(C/A)——
Existing Easement Line	—— E ——
Proposed Temporary Construction Easement	—— E ——
Proposed Temporary Drainage Easement	—— TDE ——
Proposed Permanent Drainage Easement	—— PDE ——
Proposed Permanent Drainage / Utility Easement	—— DUE ——
Proposed Permanent Utility Easement	—— PUE ——
Proposed Temporary Utility Easement	—— TUE ——
Proposed Aerial Utility Easement	—— AUE ——
Proposed Permanent Easement with Iron Pin and Cap Marker	◈

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	— — — — —
Existing Curb	━━ ━━ ━━
Proposed Slope Stakes Cut	— — — C — — —
Proposed Slope Stakes Fill	— — — F — — —
Proposed Curb Ramp	(CR)
Existing Metal Guardrail	—┬——┬——┬—
Proposed Guardrail	—┬—┬—┬—┬—
Existing Cable Guiderail	—⊓——⊓——⊓—
Proposed Cable Guiderail	—⊓—⊓—⊓—⊓—
Equality Symbol	◕
Pavement Removal	▩

VEGETATION:

Single Tree	✿
Single Shrub	✿
Hedge	⌒⌒⌒⌒⌒
Woods Line	—⌒—⌒—⌒—
Orchard	✿ ✿ ✿ ✿
Vineyard	Vineyard

EXISTING STRUCTURES:

MAJOR:

Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	) CONC WW (

MINOR:

Head and End Wall	⁄ CONC HW ＼
Pipe Culvert	═══
Footbridge	>————<
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	— — — — —
Storm Sewer Manhole	Ⓢ
Storm Sewer	—— S ——

UTILITIES:

POWER:

Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	—●—
Proposed Joint Use Pole	—○—
Power Manhole	Ⓟ
Power Line Tower	⊠
Power Transformer	◪
U/G Power Cable Hand Hole	HH
H-Frame Pole	●—●
Recorded U/G Power Line	—— P ——
Designated U/G Power Line (S.U.E.*)	- - - P - - -

TELEPHONE:

Existing Telephone Pole	—●—
Proposed Telephone Pole	—○—
Telephone Manhole	Ⓣ
Telephone Booth	☎
Telephone Pedestal	T
Telephone Cell Tower	⚲
U/G Telephone Cable Hand Hole	HH
Recorded U/G Telephone Cable	—— T ——
Designated U/G Telephone Cable (S.U.E.*)	- - - T - - -
Recorded U/G Telephone Conduit	—— TC ——
Designated U/G Telephone Conduit (S.U.E.*)	- - - TC - - -
Recorded U/G Fiber Optics Cable	—— T FO ——
Designated U/G Fiber Optics Cable (S.U.E.*)	- - - T FO - - -

WATER:

Water Manhole	Ⓦ
Water Meter	⬭
Water Valve	⊗
Water Hydrant	⊙
Recorded U/G Water Line	—— W ——
Designated U/G Water Line (S.U.E.*)	- - - W - - -
Above Ground Water Line	A/G Water

TV:

TV Satellite Dish	⋉
TV Pedestal	C
TV Tower	⊗
U/G TV Cable Hand Hole	HH
Recorded U/G TV Cable	—— TV ——
Designated U/G TV Cable (S.U.E.*)	- - - TV - - -
Recorded U/G Fiber Optic Cable	—— TV FO ——
Designated U/G Fiber Optic Cable (S.U.E.*)	- - - TV FO - - -

GAS:

Gas Valve	◇
Gas Meter	◇
Recorded U/G Gas Line	—— G ——
Designated U/G Gas Line (S.U.E.*)	- - - G - - -
Above Ground Gas Line	A/G Gas

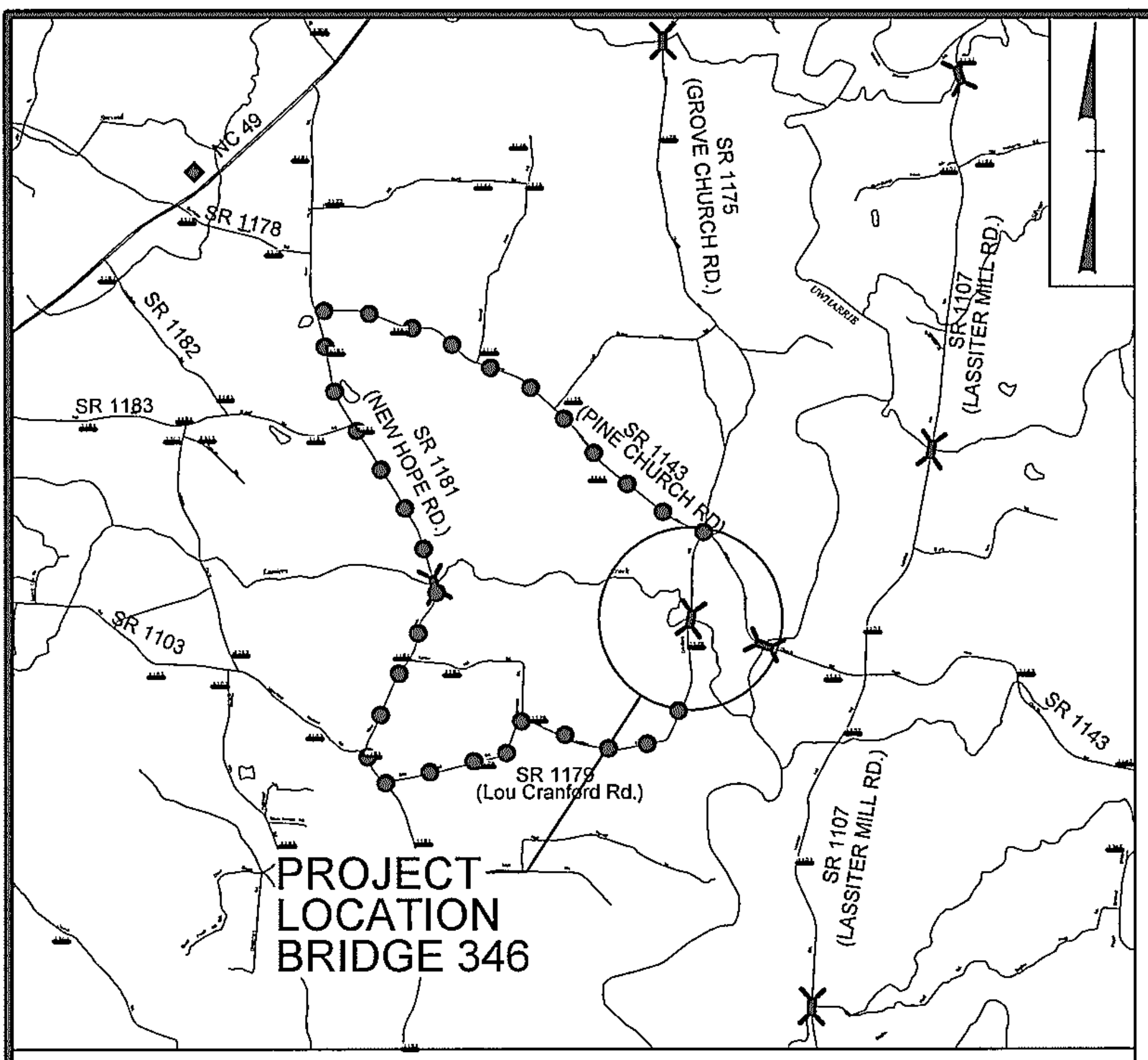
SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	—— SS ——
Above Ground Sanitary Sewer	A/G Sanitary Sewer
Recorded SS Forced Main Line	—— FSS ——
Designated SS Forced Main Line (S.U.E.*)	- - - FSS - - -

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	⊡
Utility Located Object	⊙
Utility Traffic Signal Box	S
Utility Unknown U/G Line	—— ?UTL ——
U/G Tank; Water, Gas, Oil	▭
Underground Storage Tank, Approx. Loc.	(UST)
A/G Tank; Water, Gas, Oil	▭
Geoenvironmental Boring	☢
U/G Test Hole (S.U.E.*)	⊗
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

5/14/99



VICINITY MAP

SURVEY CONTROL SHEET

SEPI ENGINEERING & CONSTRUCTION
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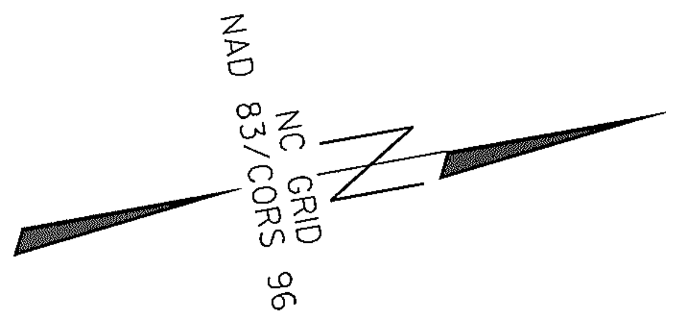
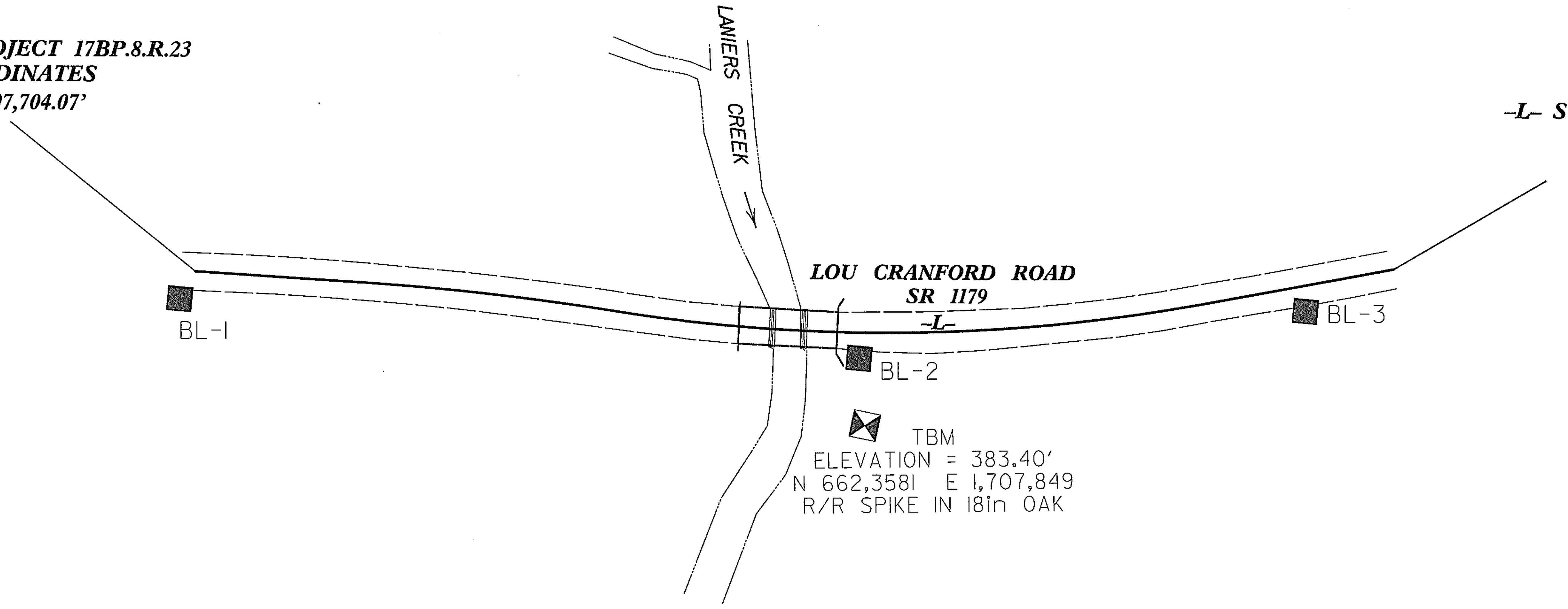
PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	1C
R/W SHEET NO.	

-L- ALIGNMENT					
BL Point	North	East	Elevation	Station	Offset
BL-1	662,010.09′	1,707,716.98′	391.48′	OUTSIDE PROJECT LIMITS	
BL-2	662,361.03′	1,707,812.66′	384.83′	13+55.97	13.72
BL-3	662,599.06′	1,707,830.49′	407.97′	15+92.50	13.52



-L- STA. 10+00.00 BEGIN STATE PROJECT 17BP.8.R.23
LOCALIZED PROJECT COORDINATES
N = 662,020.90’ E = 1,707,704.07’

-L- STA. 16+42.55 END STATE PROJECT 17BP.8.R.23
LOCALIZED PROJECT COORDINATES
N = 662,649.12’ E = 1,707,817.00’



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY SEPI ENGINEERING AND CONSTRUCTION FOR CONTROL POINT "BL-1" WITH NAD 83/CORS 96 STATE PLANE GRID COORDINATES OF NORTHING: 662,010.09(ft) EASTING: 1,707,716.98(ft) ELEVATION: 391.48(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999872184

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-1" TO -L- STATION 10+00.00 IS 16.8392′ N50°03′14.9″W

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT WAS PROVIDED BY SEPI ENGINEERING AND CONSTRUCTION, INC. CONTROL POINTS PROVIDED ARE AS FOLLOWS:*

⬢ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE SEPI ENGINEERING AND CONSTRUCTION, INC.*

◆ *INDICATES CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY SEPI ENGINEERING AND CONSTRUCTION, INC.*

NOTE: DRAWING NOT TO SCALE

$$$$SYSTIME$$$$
$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

SEPI
ENGINEERING & CONSTRUCTION
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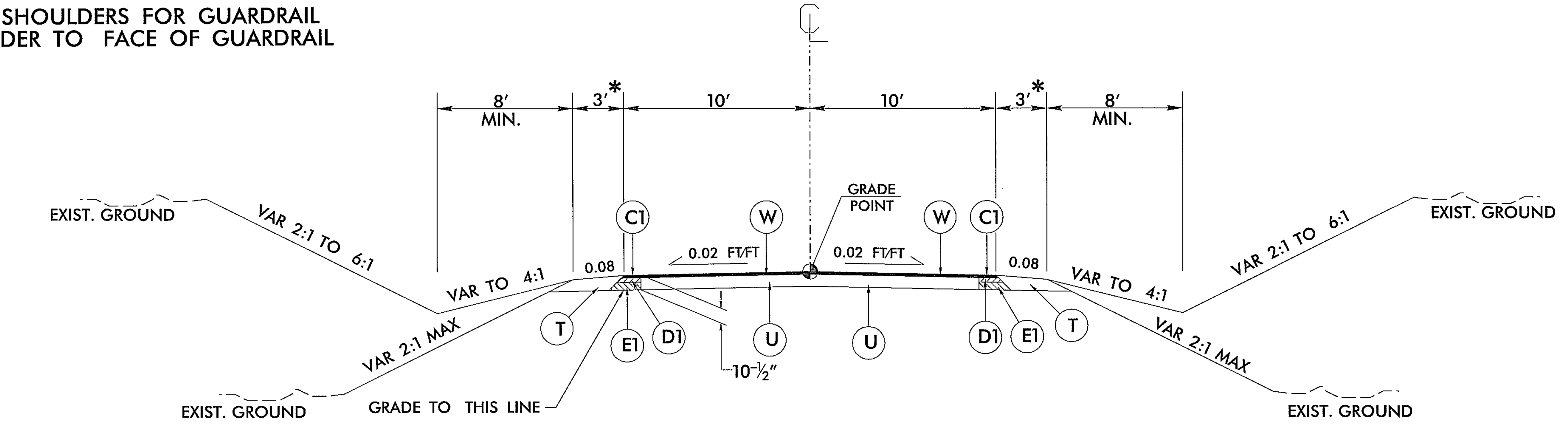
License: C-2197

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	2

* ADD 3' TO SHOULDERS FOR GUARDRAIL
PAVE SHOULDER TO FACE OF GUARDRAIL



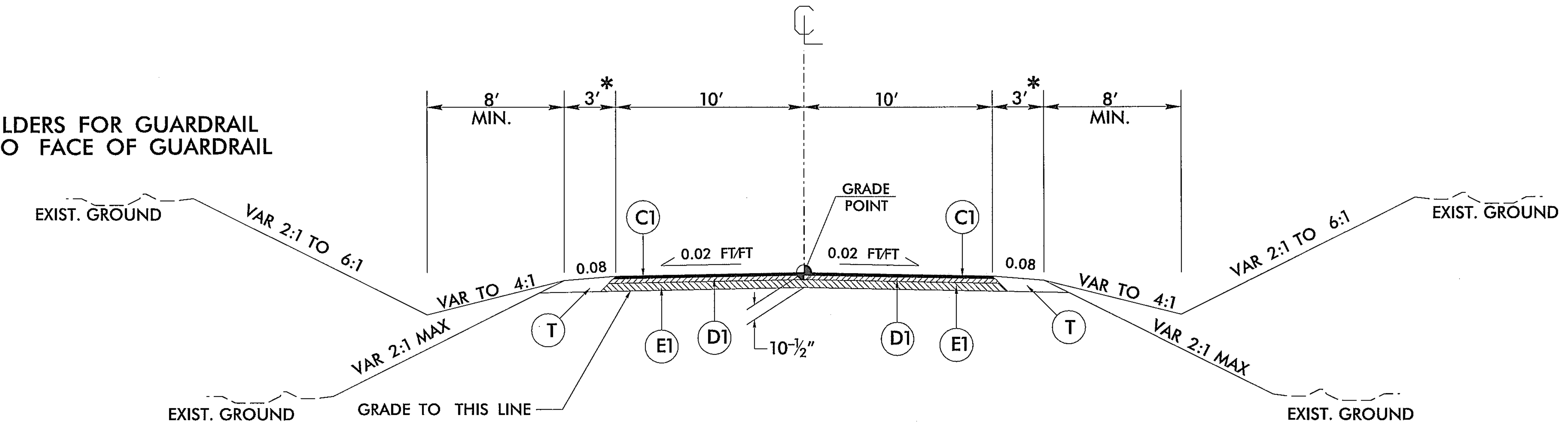
TYPICAL SECTION NO. 1

-L- STA. 10+50.00 TO -L- STA. 11+75.00
-L- STA. 14+50.00 TO -L- STA. 15+25.00

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE DETAIL)
V	MILLING (SEE DETAIL)

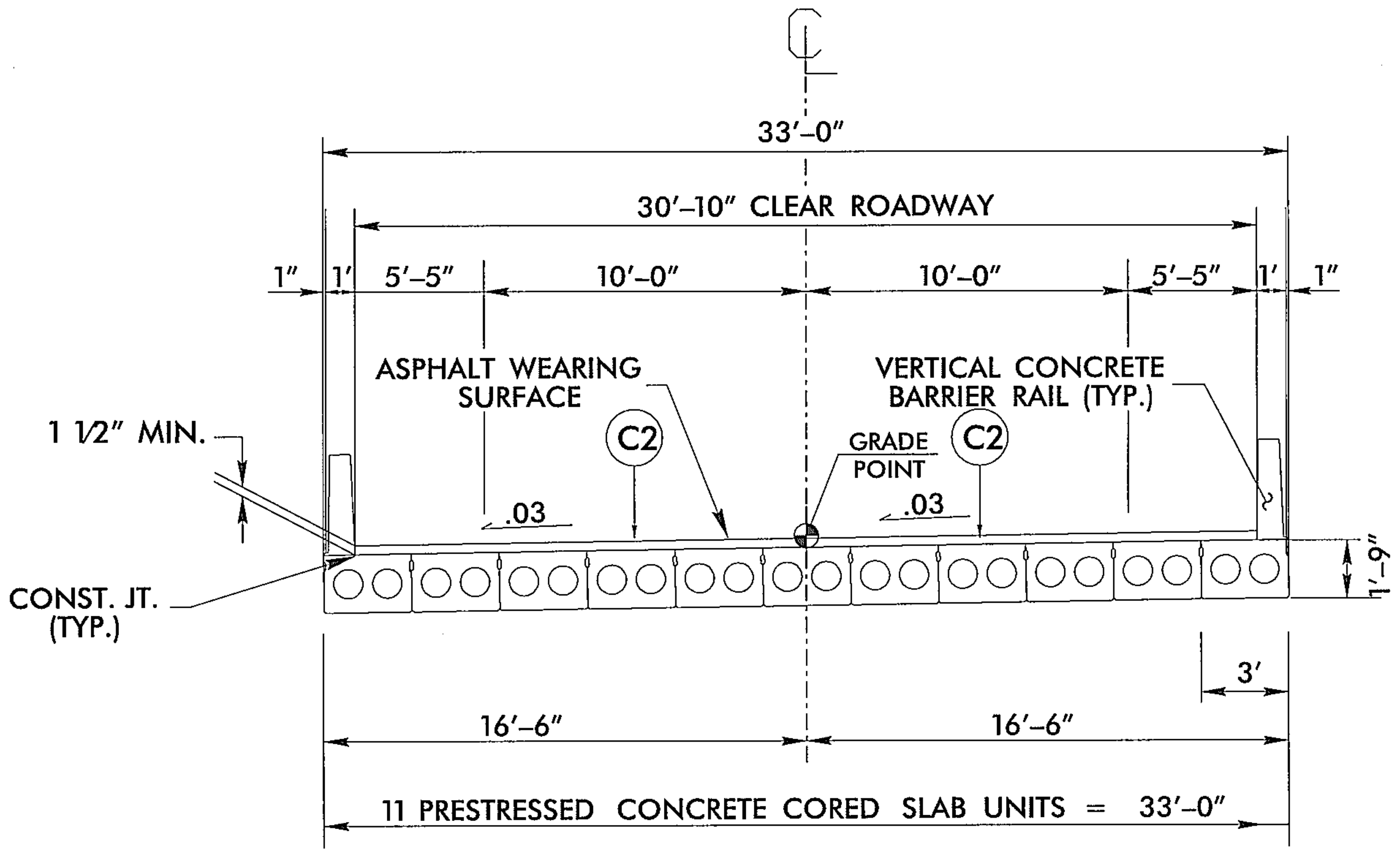
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

* ADD 3' TO SHOULDERS FOR GUARDRAIL
PAVE SHOULDER TO FACE OF GUARDRAIL



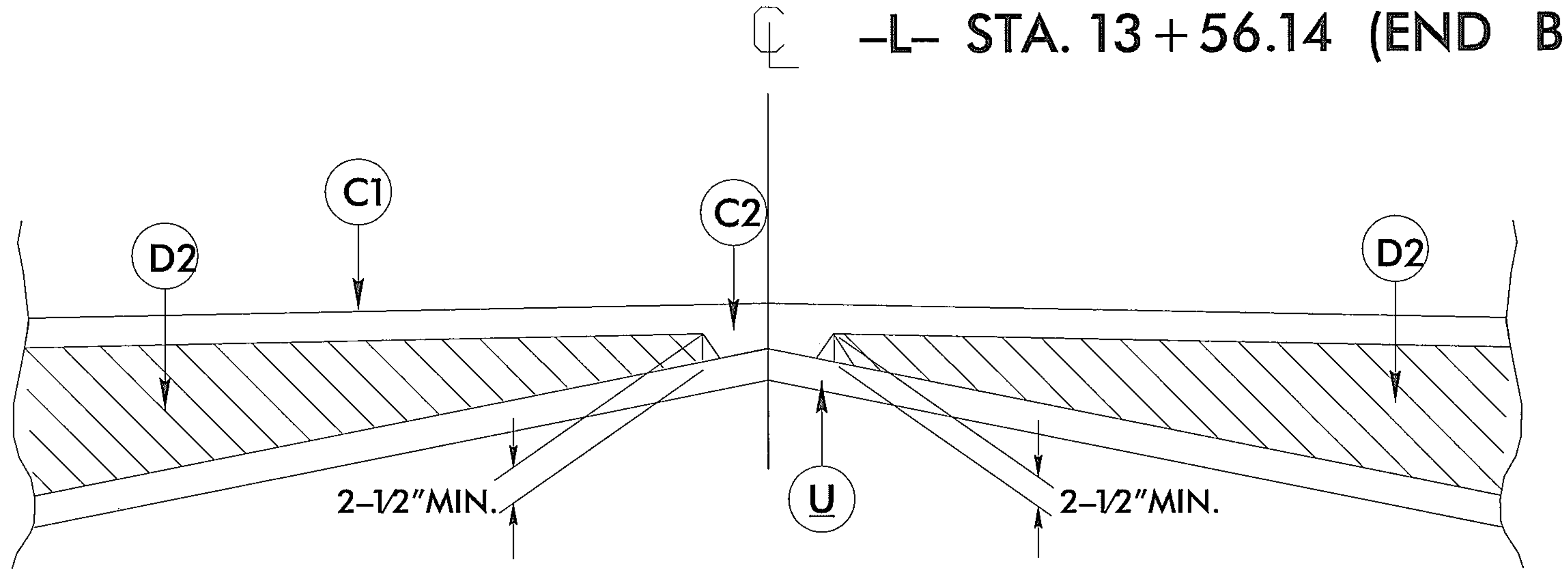
TYPICAL SECTION NO. 2

-L- STA. 11+75.00 TO -L- STA. 12+83.87 (BEGIN BRIDGE)
-L- STA. 13+56.14 (END BRIDGE) TO -L- STA. 14+50.00



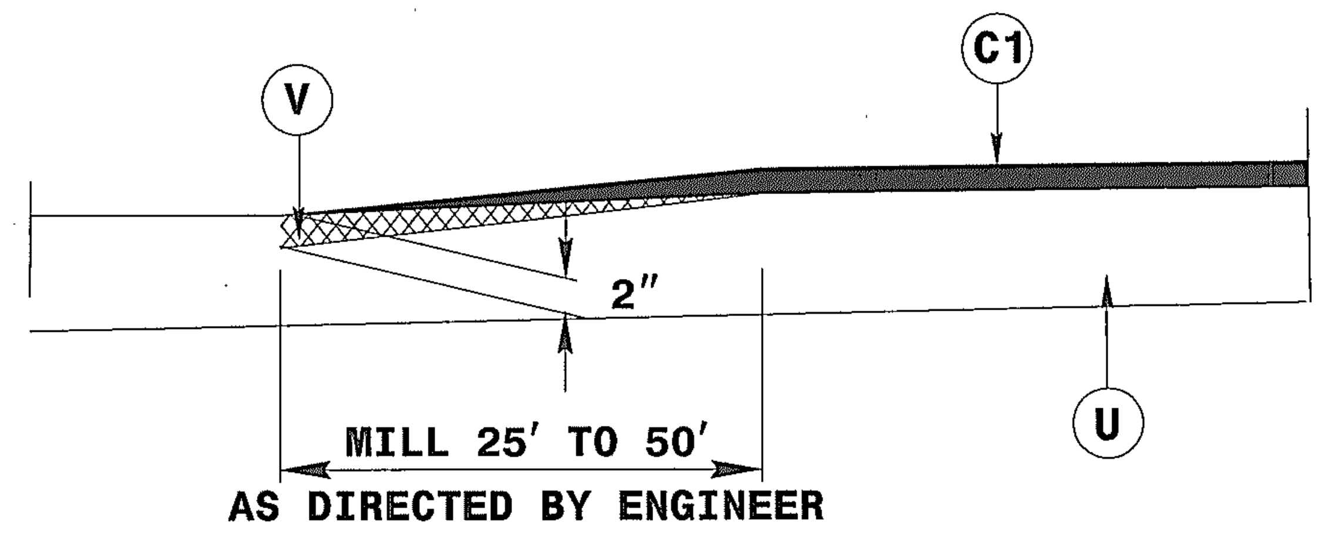
TYPICAL SECTION NO. 3

-L- STA. 12+83.87 (BEGIN BRIDGE) TO
-L- STA. 13+56.14 (END BRIDGE)



Detail Showing Method of Wedging

-L-



MILLING DETAIL

-L- 10+50.00, -L- 15+25.00

COMPUTED BY: JCM DATE: 05/28/13
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	3

ITEM NUMBER	SECTION NUMBER	DESCRIPTION	QUANTITY	UNIT
0000100000–N	800	MOBILIZATION	1	LS
0030000000–N	SP	BRIDGE APPROACH FILL–SUB REGIONAL TIER, STATION –L– STA. 13+20.00	1	LS
0043000000–N	226	GRADING	1	LS
0050000000–E	226	SUPPLEMENTARY CLEARING & GRUBBING	1	ACR
0196000000–E	270	GEOTEXTILE FOR SOIL STABILIZATION	240	SY
0318000000–E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	2	TON
0582000000–E	310	15" CS PIPE CULVERT, 0.064" THICK	16	LF
1220000000–E	545	INCIDENTAL STONE	100	TON
1330000000–E	607	INCIDENTAL MILLING	230	SY
1489000000–E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	270	TON
1498000000–E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B	150	TON
1525000000–E	610	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A	220	TON
1575000000–E	620	ASPHALT BINDER FOR PLANT MIX	35	TON
2286000000–N	840	MASONARY DRAINAGE STRUCTURE	2	EA
2364200000–N	840	WIDE SLOT FLAT GRATE, 840.20	2	EA
2556000000–E	846	SHOULDER BERM GUTTER	46	LF
3030000000–E	862	STEEL BEAM GUARDRAIL	25	LF
3150000000–N	862	ADDITIONAL GUARDRAIL POSTS	5	EA
3215000000–N	862	GUARDRAIL ANCHOR UNITS, TYPE III	4	EA
3270000000–N	SP	GUARDRAIL ANCHOR UNITS, TYPE 350	4	EA
3649000000–E	876	RIP RAP, CLASS B	59	TON
3656000000–E	876	GEOTEXTILE FOR DRAINAGE	344	SY
4399000000–N	SP	TEMPORARY TRAFFIC CONTROL	1	LS
4810000000–E	1205	PAINT PAVEMENT MARKING LINES (4")	1,900.0	LF
6000000000–E	1605	TEMPORARY SILT FENCE	1015	LF
6006000000–E	1610	EROSION CONTROL STONE, CLASS A	80	TON
6009000000–E	1610	EROSION CONTROL STONE, CLASS B	90	TON
6012000000–E	1610	SEDIMENT CONTROL STONE	135	TON
6015000000–E	1615	TEMPORARY MULCHING	0.5	ACR
6018000000–E	1620	SEED FOR TEMPORARY SEEDING	50	LB
6021000000–E	1620	FERTILIZER FOR TEMPORARY SEEDING	0.25	TON
6024000000–E	1622	TEMPORARY SLOPE DRAINS	200	LF
6029000000–E	SP	SAFETY FENCE	1000	LF
6030000000–E	1630	SILT EXCAVATION	90	CY
6037000000–E	SP	COIR FIBER MAT	200	SY
6042000000–E	1632	1/4" HARDWARE CLOTH	560	LF
6071010000–E	SP	WATTLE	25	LF
6071020000–E	SP	POLYACRYLAMIDE (PAM)	15	LB
6084000000–E	1660	SEEDING AND MULCHING	0.5	ACR

ITEM NUMBER	SECTION NUMBER	DESCRIPTION	QUANTITY	UNIT
6087000000–E	1660	MOWING	0.5	ACR
6090000000–E	1661	SEED FOR REPAIR SEEDING	50	LB
6093000000–E	1661	FERTILIZER FOR REPAIR SEEDING	0.25	TON
6096000000–E	1662	SEED FOR SUPPLEMENTAL SEEDING	50	LB
6108000000–E	1665	FERTILIZER TOP DRESSING	0.50	TON
6114500000–N	1667	SPECIALIZED HAND MOWING	10	MHR
6117000000–N	1675	RESPONSE FOR EROSION CONTROL	13	EA
8035000000–N	402	REMOVAL OF EXISTING STRUCTURE AT STATION 13+20.00 –L–	1	LS
8121000000–N	412	UNCLASSIFIED STRUTURE EXCAVATION AT STATION 13+20.00 –L–	1	LS
8182000000–E	420	CLASS A CONCRETE (BRIDGE)	43.6	CY
8210000000–N	422	BRIDGE APPROACH SLABS, STATION 13+20.00 –L–	1	LS
8217000000–E	425	REINFORCING STEEL (BRIDGE)	5,272	LB
8364000000–E	450	HP12X53 STEEL PILES	182	LF
8391000000–N	450	STEEL PILE POINTS	14	EA
8392500000–E	450	PREDRILLING FOR PILES	52	LF
8505000000–E	460	VERTICAL CONCRETE BARRIER RAIL	140.25	LF
8608000000–E	876	RIP RAP CLASS II (2'–0" THICK)	131.9	TON
8622000000–E	876	GEOTEXTILE FOR DRAINAGE	146.6	SY
8657000000–N	430	ELASTOMERIC BEARINGS	1	LS
8763000000–E	430	3'–0" X 2'–0" PRESTRESSED CONC CORED SLABS	770	LF

4/04/06

COMPUTED BY:______________ DATE:__________
CHECKED BY:______________ DATE:__________

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PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	3-A
RW SHEET NO.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)												C.S. PIPE							R.C. PIPE (CLASS III)							R.C. PIPE (CLASS IV)							
SIZE								12"	15"	18"	24"	30"	36"	42"	48"					12"	15"	18"	24"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE		FROM	TO													DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	.064	.064	.064	.064	.079	.109	.109															
L 12+56	LT	401	OUT	382.20	379.40	379.00															8																				
L 13+79	LT	402	OUT	386.30	383.50	383.00															8																				
																					16																				

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS.		QUANTITIES FOR DRAINAGE STRUCTURES	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT.		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE				CONCRETE TRANSITIONAL SECTION		G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
						R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	A 5.0' THRU 10.0'	B 10.0' AND ABOVE		E	F	G		CATCH BASIN	DROP INLET											
L 12+56								1										1	1									TBDI
L 13+79								1										1	1									TBDI
								2										2	2									

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

RD248621

COMPUTED BY: CTR DATE: 8/2/2012
CHECKED BY: ______________ DATE: _________

PROJECT NO.	SHEET NO.
17BP.8.R.23	3B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SEPI ENGINEERING & CONSTRUCTION

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L-					
10+50	12+84	167	18		149
	(BEGIN BRIDGE)				
13+56	15+25	81	11		70
(END BRIDGE)					
SUBTOTALS:		248	29	0	219
SUBTOTALS:					
PROJECT TOTALS:					
Waste in Lieu of Borrow					
PROJECT TOTALS:		216	29	0	219
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					
GRAND TOTALS:		216	29		219
SAY:		**220**	**30**		

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	YD^2
-L-	11+75	12+92	CL	259
-L-	13+44	14+50	CL	235
			TOTAL:	494.53
			SAY:	500

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH		W		ANCHORS							IMP. ATTEN. TYPE 350			REMOVE EXISTING GRDRAIL		REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	XI MOD	XI	GRAU 350	M-350	TYPE III	CAT-1	VI MOD	EA	G	NG			
-L-	12+09	12+84	LT	75.00				12+85	6.51	7							1		1								
-L-	13+56	14+31	LT	75.00			13+55		6.70	7							1		1								
-L-	12+09	12+84	RT	75.00			12+85		6.51	7							1		1								
-L-	13+56	14+31	RT	75.00				13+55	6.32	7							1		1								
SUBTOTAL				**300.00**													**4**		**4**								
LESS ANCHOR DEDUCTIONS																											
	GRAU-350 @ 50'			200																							
	TYPE III @ 18.75'			75																							
TOTAL				**25**													**4**		**4**								
SAY				**25**																							
	ADDITIONAL GUARDRAIL POST =			**5**																							

8/17/99

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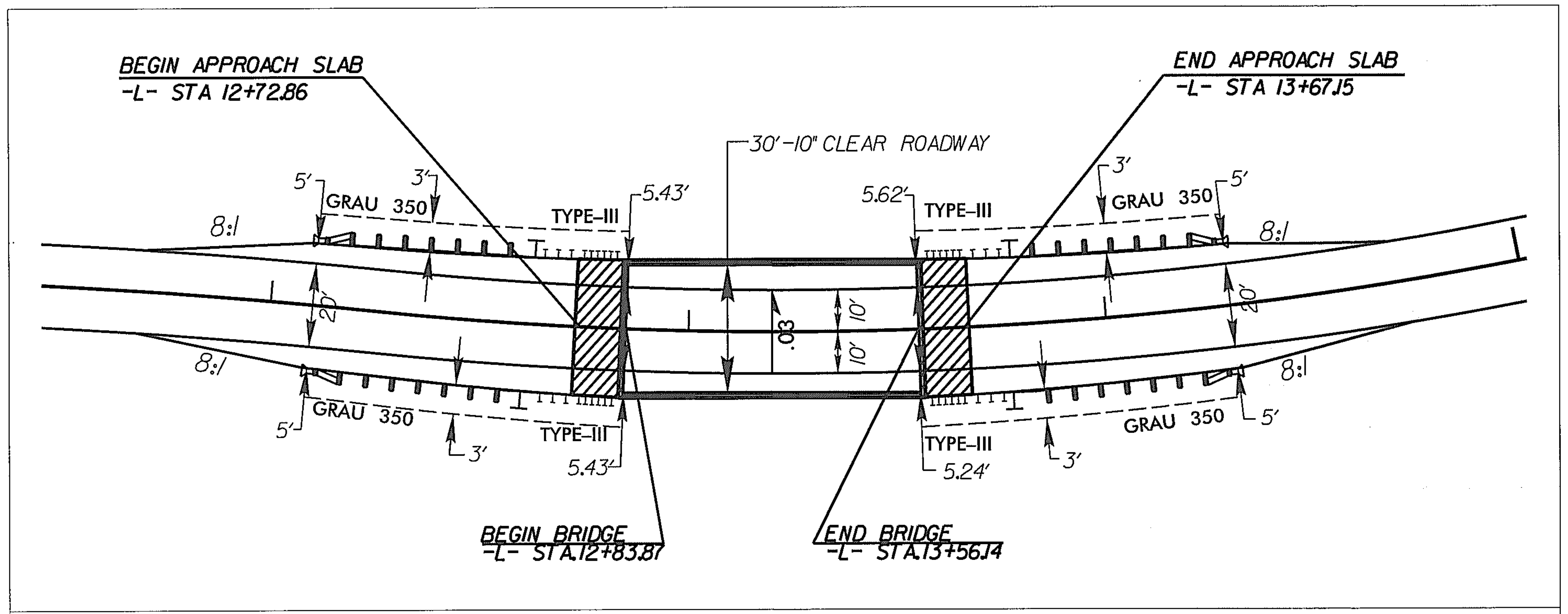
PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	4

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 029712 AGNIESZKA J. NAU 05-10-13	SEAL 12786 STEVEN M. BONDOR 5.10.13

NC GRID
NAD 83/CORS 96

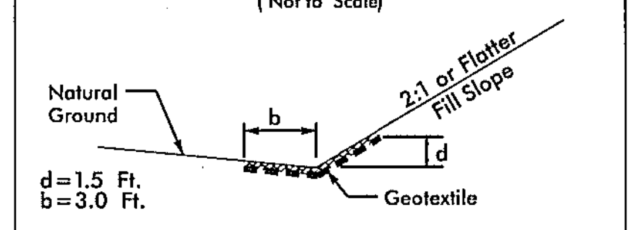


Sketch showing Dimensions of Pavement and Shoulder in Relation to the Proposed Bridge

-L-

PI Sta 11+55.56	PI Sta 13+82.59
Δ = 5° 19' 35.8" (RT)	Δ = 19° 17' 19.1" (LT)
D = 3° 49' 11.0"	D = 6° 11' 14.8"
L = 139.45'	L = 311.74'
T = 69.78'	T = 157.36'
R = 1,500.00'	R = 926.00'

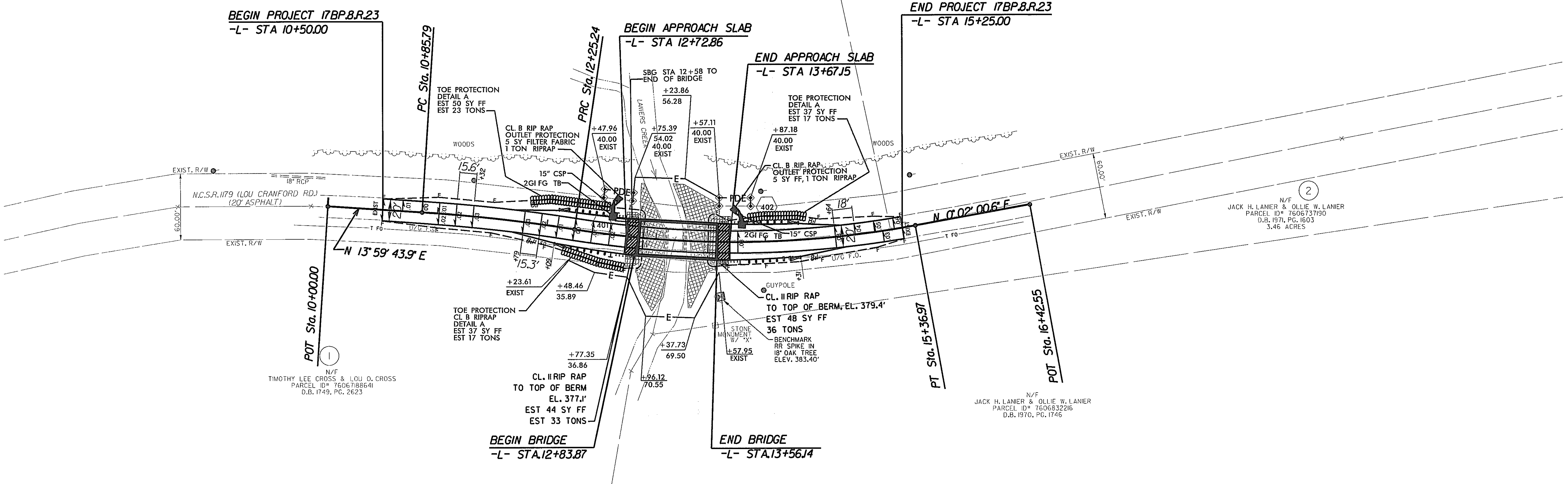
DETAIL A
TOE PROTECTION
(Not to Scale)



d=1.5 Ft.
b=3.0 Ft.

Type of Liner= CL B Rip-Rap

FROM STA. 11+80 TO STA. 12+55 LT
FROM STA. 12+20 TO STA. 12+75 RT
FROM STA. 13+85 TO STA. 14+40 LT



NOTE: SEE PLAN SHEET 5 FOR PROFILE

NOTE: SEE SHEETS S-1 THRU S-15 FOR STRUCTURE PLANS

$$$$SYSTIME$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

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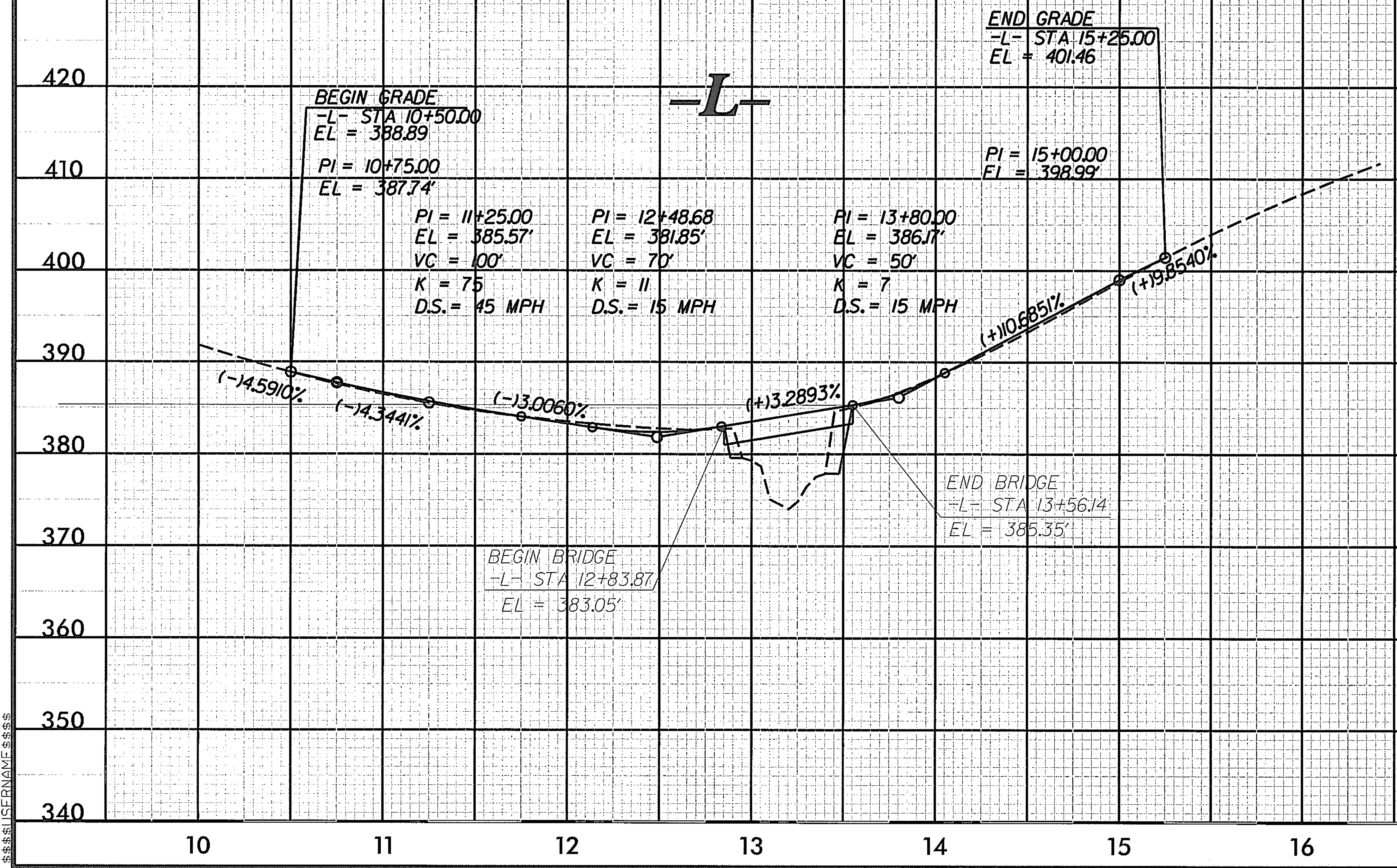
PROJECT REFERENCE NO.	SHEET NO.
17.BP.8.R.23	5

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 029712 AGNIESZKA J. NAIL 05-10-13	SEAL 12786 STEVEN M. BONDOR 5-10-13

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 1230 CFS
DESIGN FREQUENCY = 5 YRS
DESIGN HW ELEVATION = 382.0' FT
BASE DISCHARGE = 3096 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 383.33 FT
OVERTOPPING DISCHARGE = 1630 CFS
OVERTOPPING FREQUENCY = 10 YRS
OVERTOPPING ELEVATION = 382.7 FT

DATE OF SURVEY = 04/23/2012
W.S. ELEVATION AT DATE OF SURVEY = 375.5 FT

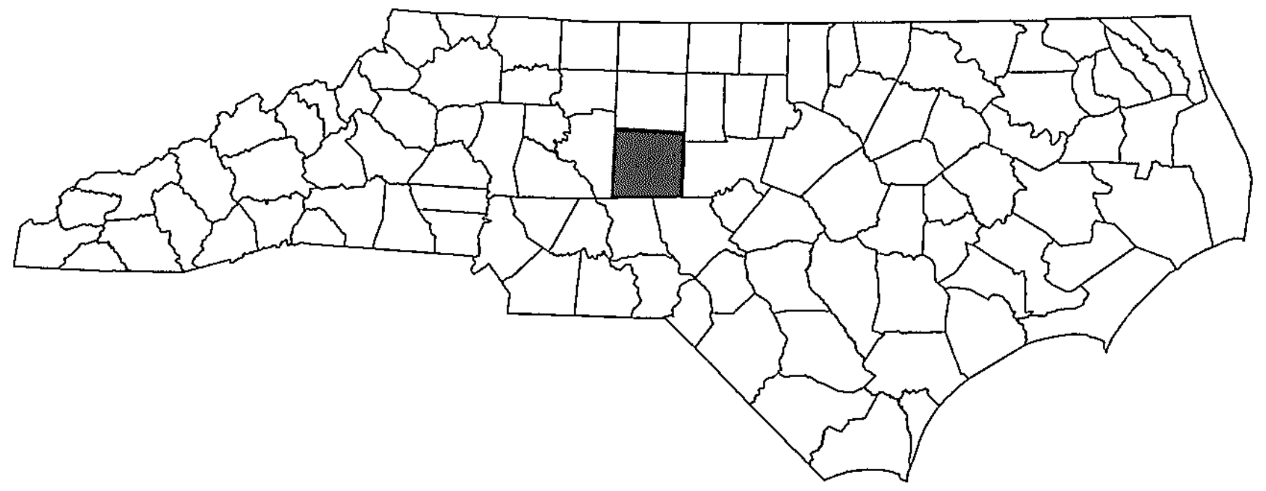


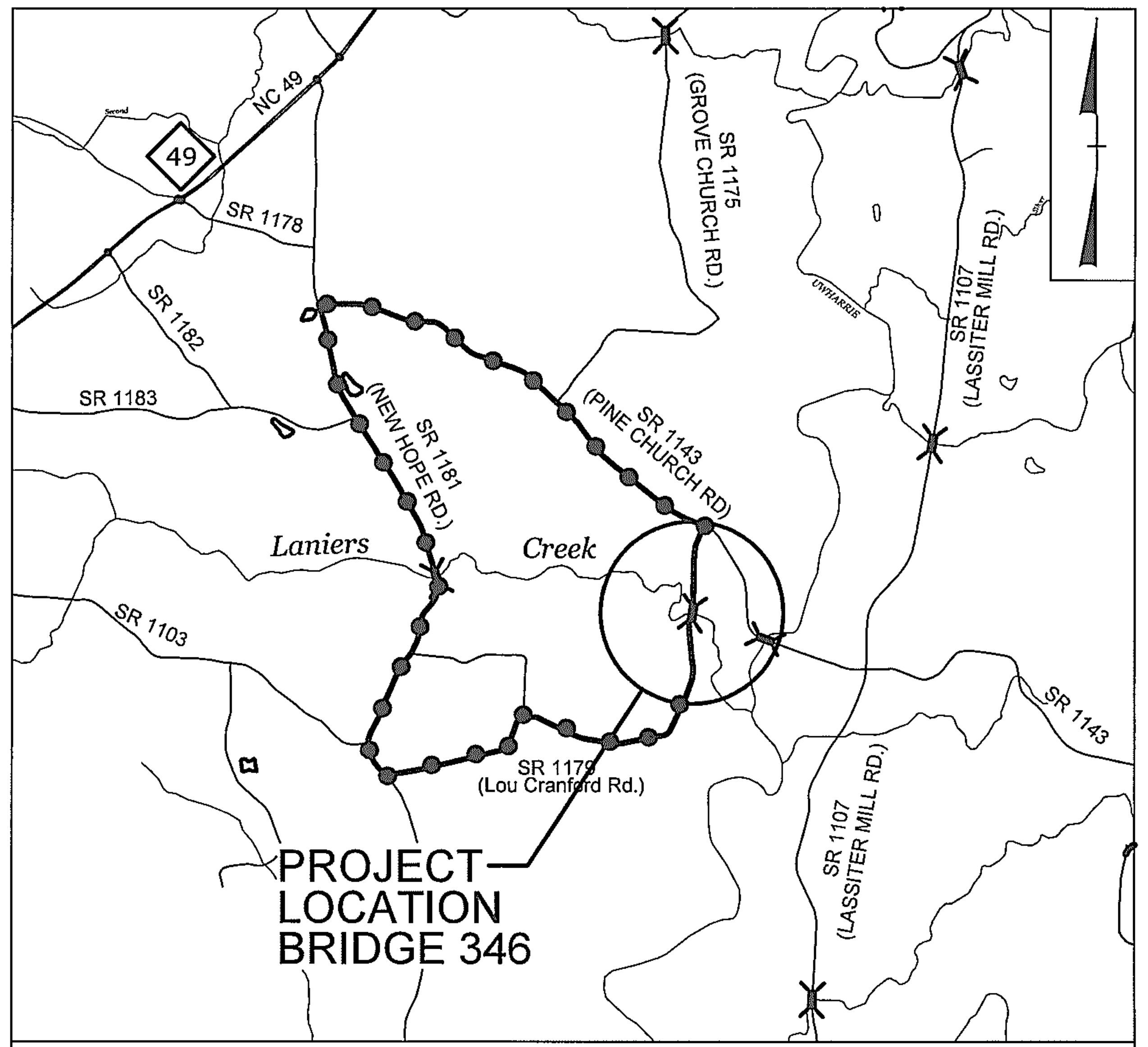
NOTE: SEE PLAN SHEET 4 FOR PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

RANDOLPH COUNTY





VICINITY MAP

OFF–SITE DETOUR ROUTE
●–●–●–●–●–●

LOCATION: ***BRIDGE NO. 346 ON SR 1179 (LOU CRANFORD RD) OVER LANIERS CREEK***

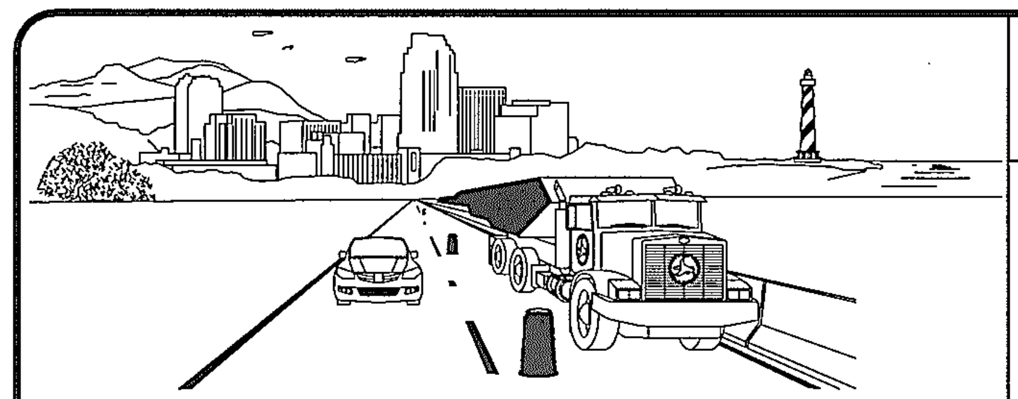
TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, & STRUCTURE***

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND PHASING)
TMP-2	OFF-SITE DETOUR
TMP-3	ROAD CLOSURE
SP-1	SIGN DESIGN

SHEET NO.
TMP-1

TIP PROJECT: *17BP.8.R.23*



WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. *STATE TRAFFIC MANAGEMENT ENGINEER*
JOSEPH ISHAK, P.E. *TRAFFIC CONTROL PROJECT ENGINEER*
_______________ *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
_______________ *TRAFFIC CONTROL DESIGN ENGINEER*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

Prepared In the Office of:
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License: C-2197

APPROVED: Ste Mille
DATE: 5-8-13

SEAL

SEAL 037026
STEVEN D. MILLER

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.23	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANAUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES - TYPE III

LEGEND

GENERAL

⬅	DIRECTION OF TRAFFIC FLOW
◄🚶►	DIRECTION OF PEDESTRIAN TRAFFIC FLOW
----------	EXIST. PVMT.
⟶	NORTH ARROW
────	PROPOSED PVMT.
▒	WORK AREA
▩	REMOVAL
☐	USER DEFINED (IF NEEDED)
☐	USER DEFINED (IF NEEDED)

TRAFFIC CONTROL DEVICES

▨	BARRICADE (TYPE III)
▲	CONE
●	DRUM ◎ SKINNY DRUM ⊚ TUBULAR MARKER
~	TEMPORARY CRASH CUSHION
⟩●	FLASHING ARROW BOARD
⚑	FLAGGER
🚓	LAW ENFORCEMENT
▧	TRUCK MOUNTED ATTENUATOR (TMA)
◁	CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

⊲	PORTABLE SIGN
⊢	STATIONARY SIGN
⊳	STATIONARY OR PORTABLE SIGN

SIGNALS

⁝ EXISTING ⊚ PROPOSED ⊚ TEMP TEMPORARY

PAVEMENT MARKINGS

────	EXISTING LINES
━━━━	TEMPORARY LINES

PAVEMENT MARKERS

☐	CRYSTAL/CRYSTAL
◧	CRYSTAL/RED
◆	YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

↑↰↶ PAVEMENT MARKING SYMBOLS

APPROVED: St. Mill DATE: 5-8-13

SEAL

SEAL 037026
STEVEN D. MILLER

ROADWAY STANDARD
DRAWINGS & LEGEND

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.23	TMP-1B

MANAGEMENT STRATEGIES

- CLOSE SR 1179 (LOU CRANFORD RD) AND DETOUR TRAFFIC OFF-SITE
- LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION
- PROVIDE ONE MONTH NOTICE TO THE ENGINEER, RANDOLPH COUNTY EMERGENCY SERVICES, AND RANDOLPH COUNTY SCHOOL OFFICIALS PRIOR TO ROAD CLOSURE

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER ONE MONTH PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

B) INSTALL ADVANCE WORK ZONE WARNING SIGNS NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE.

D) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

E) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

F) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PHASING

STEP 1: USING RSD 1101.03 SHEET 1 OF 9, CLOSE LOU CRANFORD ROAD (SR 1179) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-2. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.

STEP 2: REMOVE THE EXISTING STRUCTURE.

STEP 3: CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.

STEP 4: PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLANS.

STEP 5: OPEN LOU CRANFORD ROAD (SR 1179) TO TRAFFIC AND REMOVE ALL TRAFFIC CONTROL DEVICES.

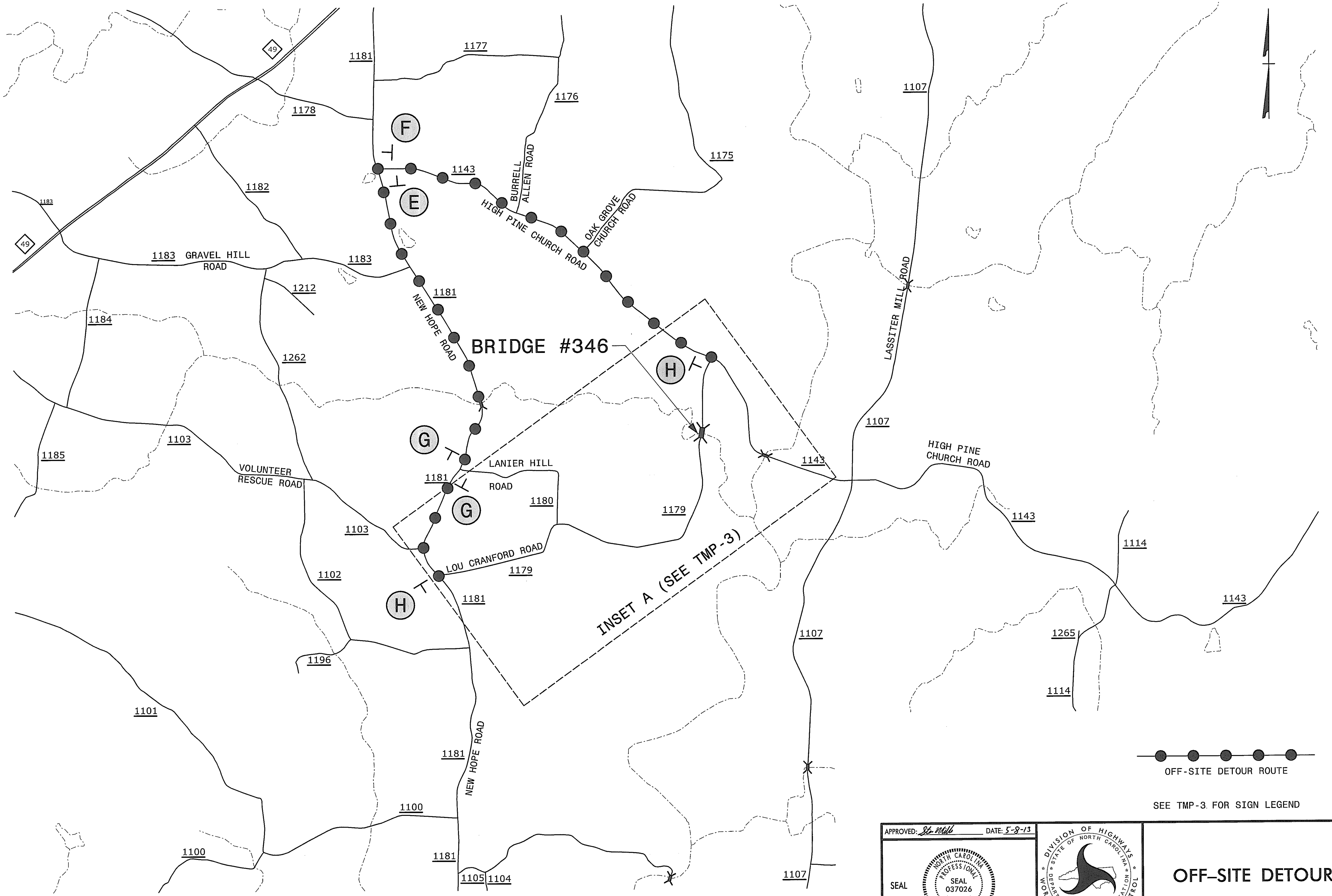
APPROVED: St Mill DATE: 5-8-13

SEAL

SEAL 037026 STEVEN D. MILLER

TRANSPORTATION
OPERATIONS
PLAN

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.23	TMP-2



APPROVED: Ste Mill DATE: 5-8-13

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037026 STEVEN D. MILLER

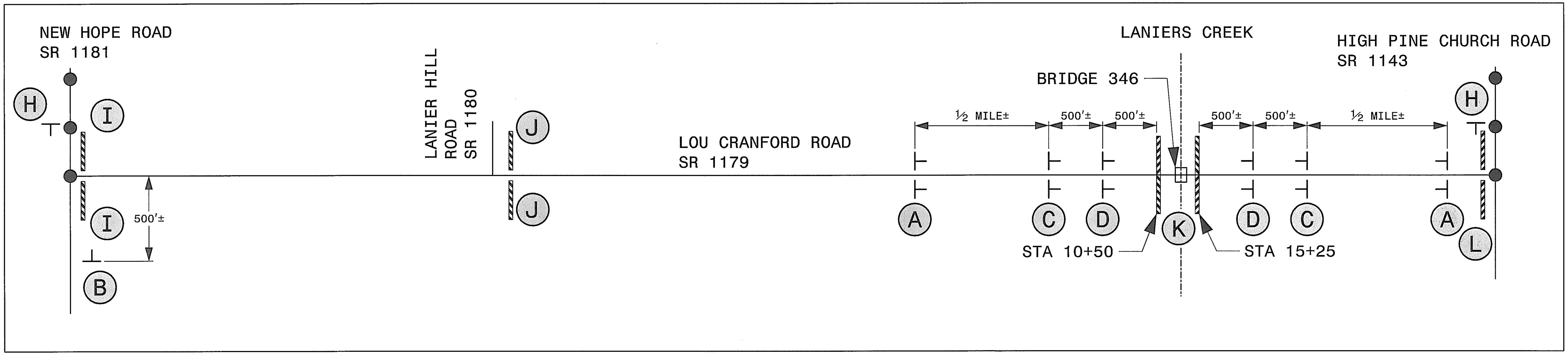
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

OFF-SITE DETOUR

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.23	TMP-3

INSET A



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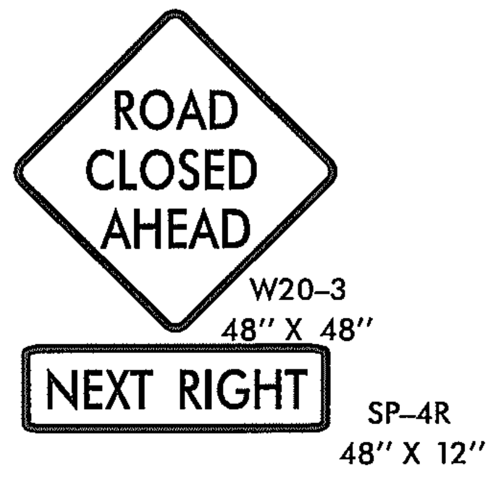

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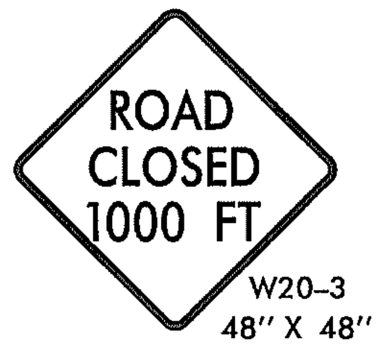

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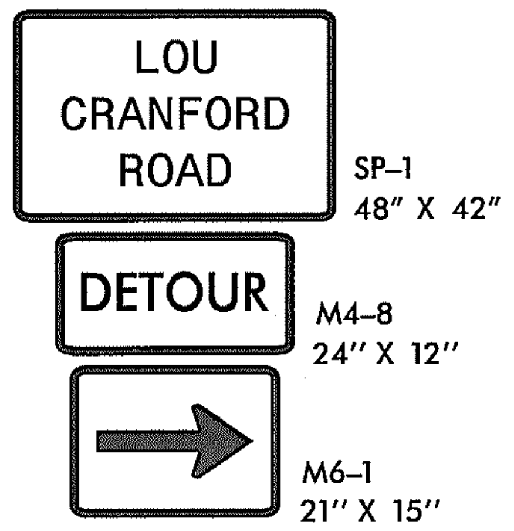
(4 EACH)

Ⓓ

(4 EACH)



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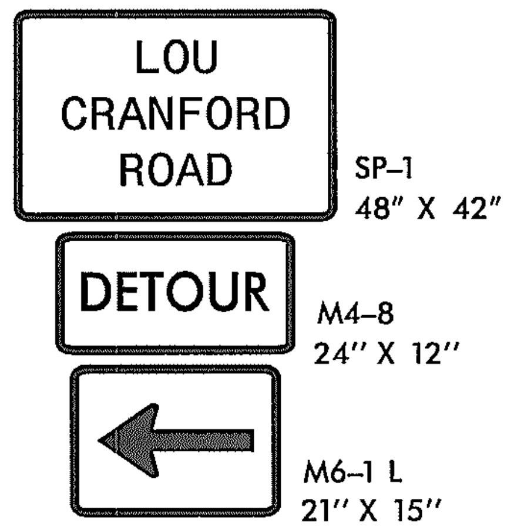

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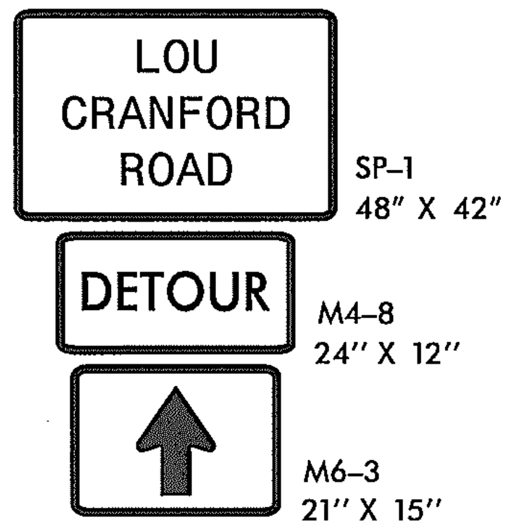

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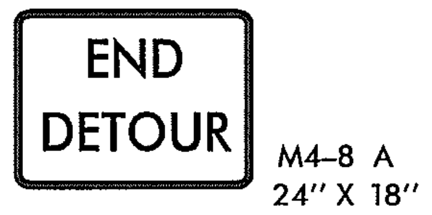
(2 EACH)



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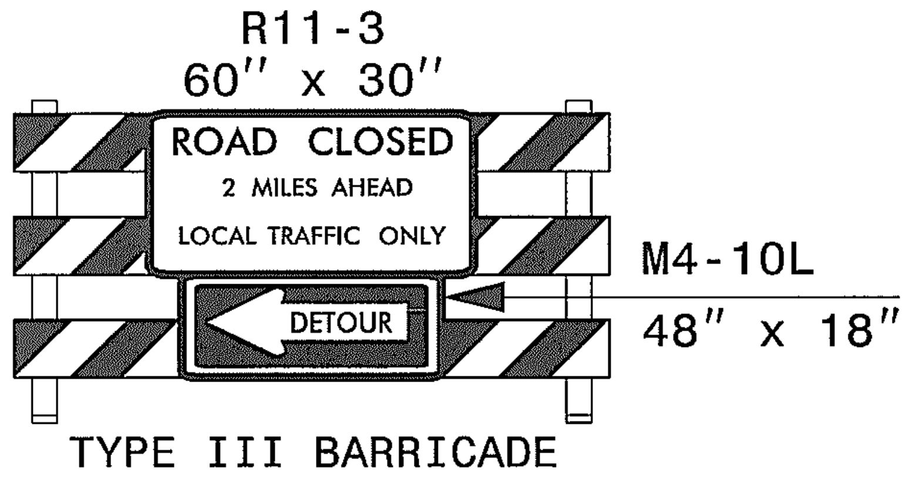

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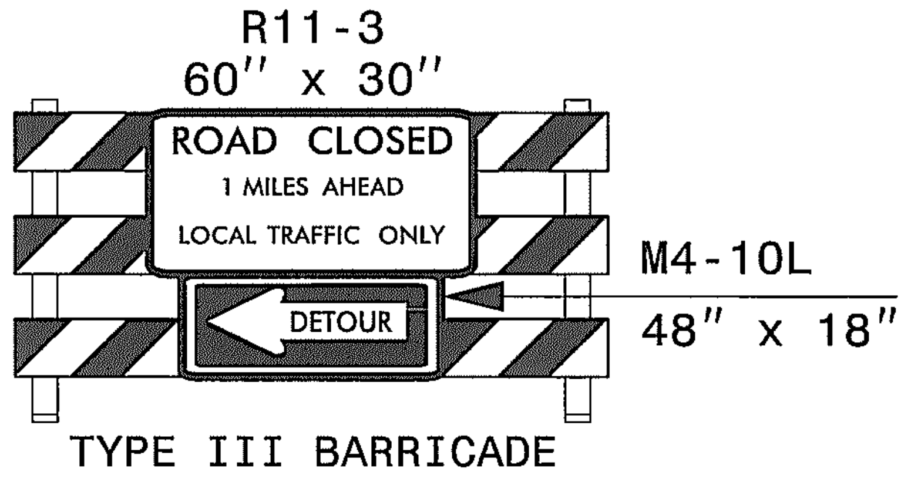

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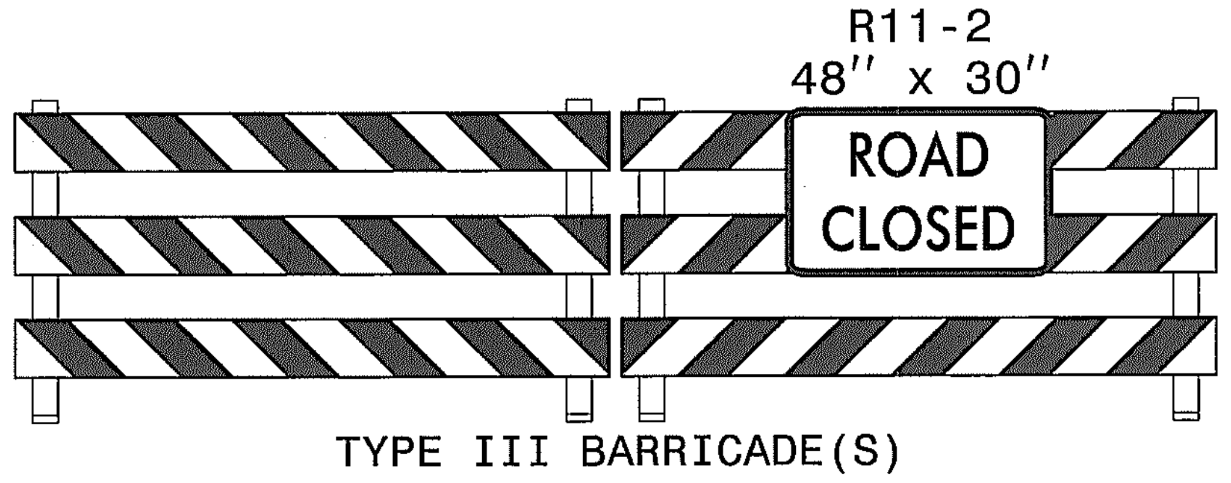

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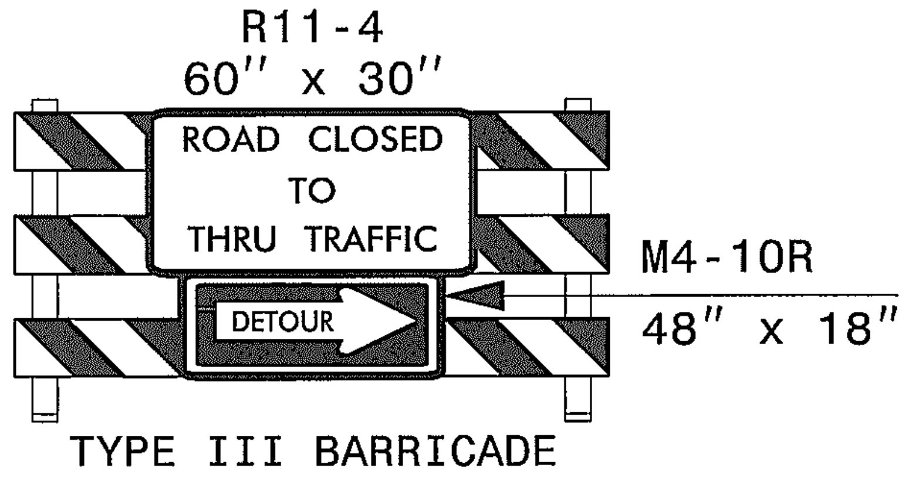

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(2 EACH)

APPROVED: St. Mill DATE: 5-8-13

SEAL

SEAL 037026 STEVEN D. MILLER

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

ROAD CLOSURE

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$$

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.23	SP-1

SEPI
ENGINEERING & CONSTRUCTION

Sepi Engineering Group
1025 Wade Avenue
Raleigh, NC 27605
Phone: (919)-789-9977
Fax: (919)-789-9591

TRANSPORTATION TRAFFIC SURVEYING ENVIRONMENTAL SITE CIVIL INSPECTIONS CONSTRUCTION

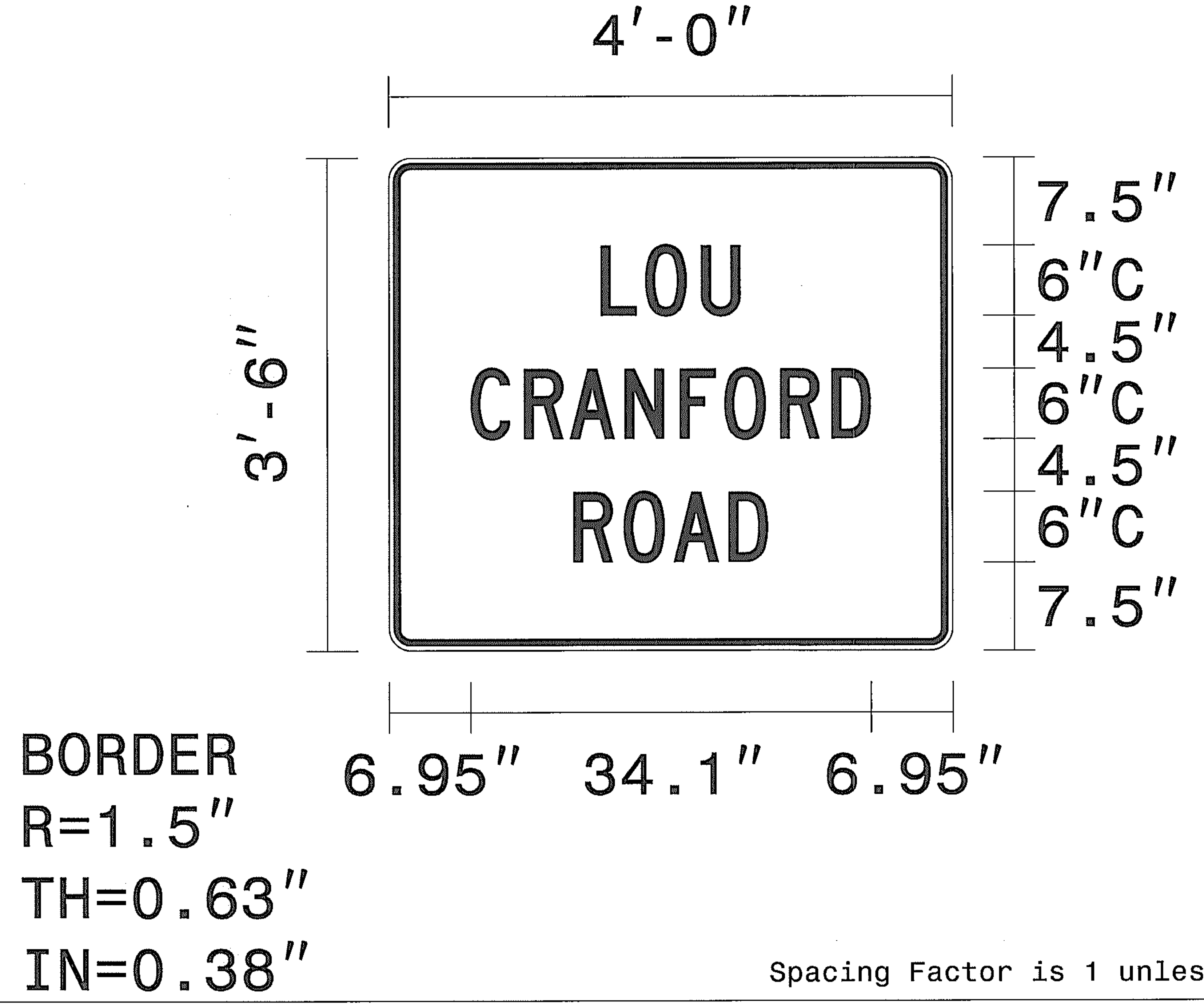
SIGN NUMBER: SP-1
TYPE: STATIONARY
QUANTITY: SEE PLANS
BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SIGN WIDTH: 48″
HEIGHT: 42″
TOTAL AREA: 14.0 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0.38″
WIDTH: 0.63″
RADII: 1.5″

NO. Z BARS:
LENGTH:
MAT'L: 0.125″ (3.2 mm) ALUMINUM

DESIGN BY: S MILLER
PROJECT ID: 17BP.8.R.47
CHECKED BY: R DRAYTON
DIV: 8
DATE: Apr 30, 2012



Spacing Factor is 1 unless specified otherwise

USE NOTES

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

LETTER POSITIONS

Letter locations are panel edge to lower left corner

									Series/Size Text Length
	L	O	U						C 2000
	18.1	21.8	26.6						11.9
	C	R	A	N	F	O	R	D	C 2000
	7	11.5	15.4	20.1	24.8	28.6	33.3	37.7	34.1
	R	O	A	D					C 2000
	15.7	20	24.2	28.9					16.6

FILENAME: Lou Cranford Rd

SEPI ENGINEERING & CONSTRUCTION SIGN DETAIL

$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$
$$$USERNAME$$$$

APPROVED: Ste Mill DATE: 5-8-13

SEAL
SEAL 037026
STEVEN D. MILLER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

SPECIAL SIGN DESIGN

TIP PROJECT: 17.BP.8.R.23

RELEASE FOR CONSTRUCTION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17.BP.8.R.23	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

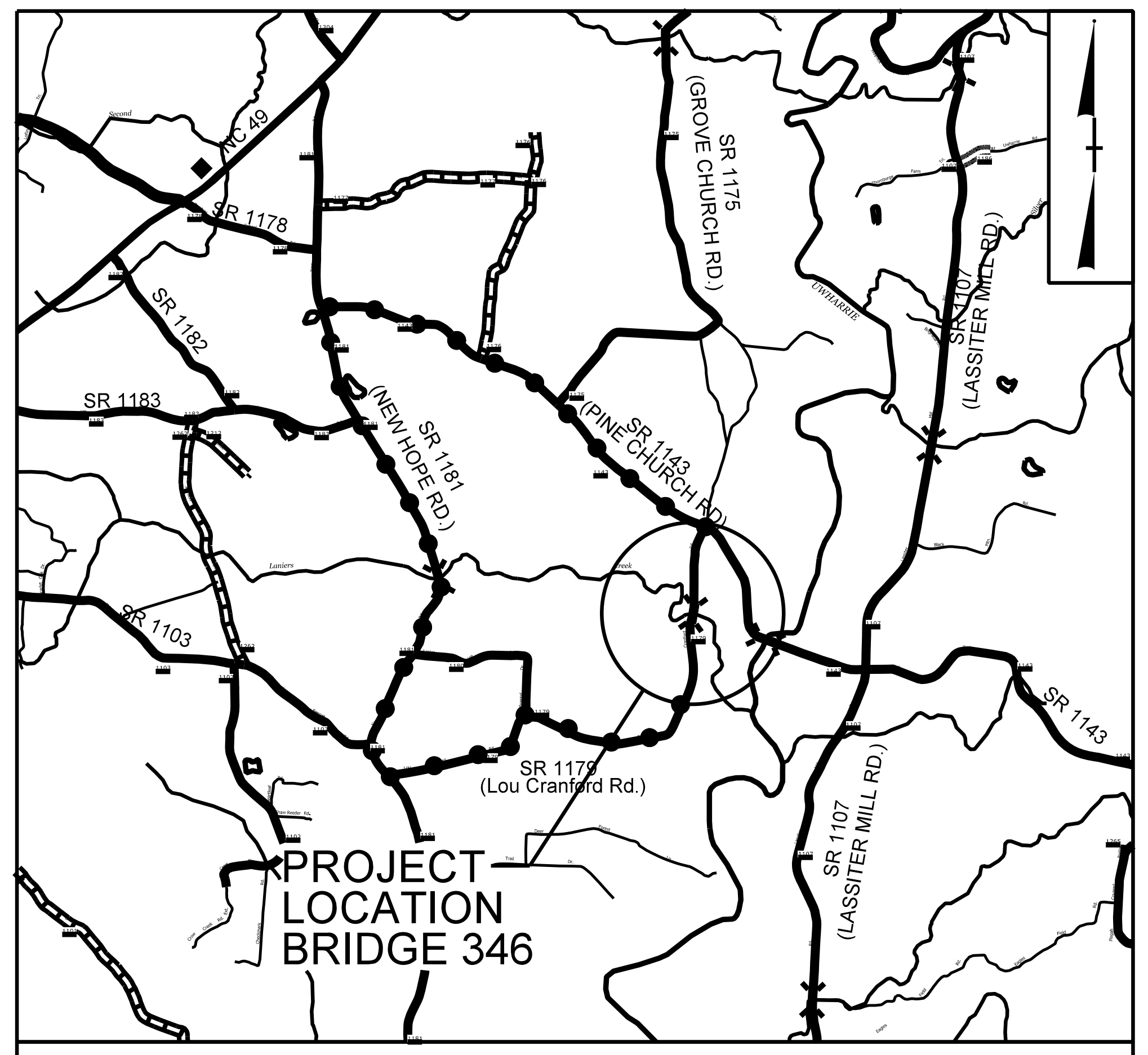
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

RANDOLPH COUNTY

LOCATION: BRIDGE NO. 346 ON SR 1179 (LOU CRANFORD ROAD) OVER LANIERS CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE



VICINITY MAP

OFF–SITE DETOUR ROUTE

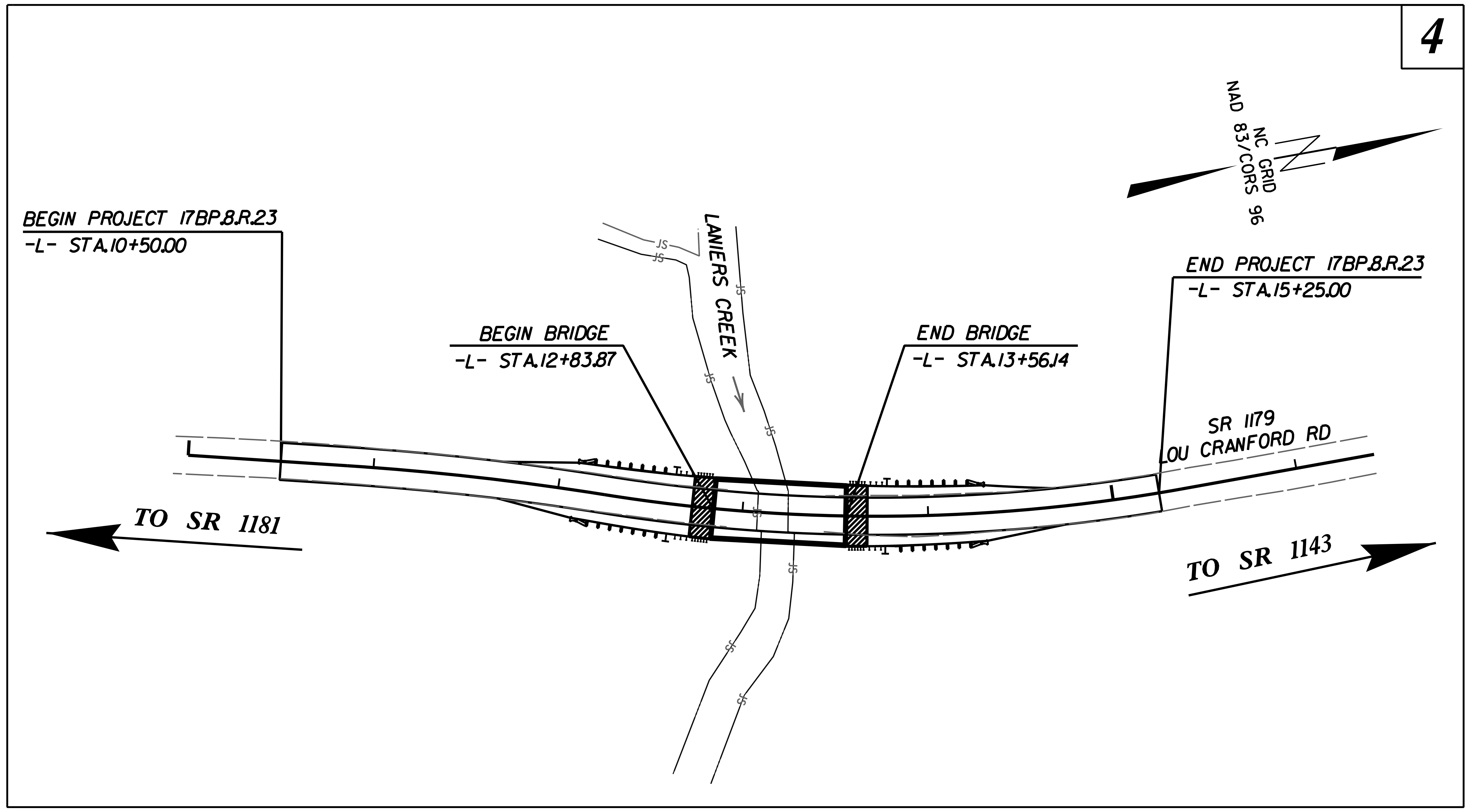
●—●—●—●—●—●

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS



THIS PROJECT IS NOT WITHIN MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

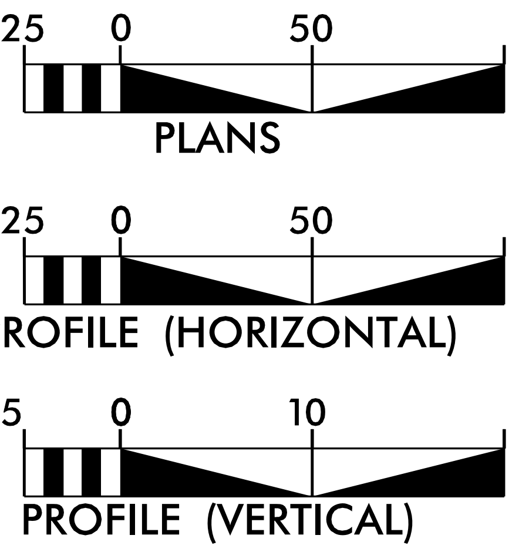
EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	—— TSD ——
1630.05	Temporary Diversion	→ TD →
1605.01	Temporary Silt Fence	—‖‖—‖‖—‖‖—
1606.01	Special Sediment Control Fence	⋀⋀⋀⋀⋀
1622.01	Temporary Berms and Slope Drains	⊥ ← ←
1630.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	▩
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▩
1633.02	Temporary Rock Silt Check Type-B	▶
	Wattle / Coir Fiber Wattle	) —— FW —— —— CFW ——
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	)
1634.01	Temporary Rock Sediment Dam Type-A	▩
1634.02	Temporary Rock Sediment Dam Type-B	◗
1635.01	Rock Pipe Inlet Sediment Trap Type-A	∪
1635.02	Rock Pipe Inlet Sediment Trap Type-B	∪
1630.04	Stilling Basin	▭
1630.06	Special Stilling Basin	⊠
	Rock Inlet Sediment Trap:	
1632.01	Type A	A▣
1632.02	Type B	B▣
1632.03	Type C	C▣
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭▭
	Infiltration Basin	▭

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR FINAL GRADE PHASE OF CONSTRUCTION.

GRAPHIC SCALES



ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

STEVEN BONDOR, PE
LEVEL III NAME

3077
LEVEL III CERTIFICATION NO.

GREENHORNE & O'MARA
CONSULTING ENGINEERS
5565 CENTERVIEW DRIVE, SUITE 107
RALEIGH, NC 27606
(919) 851-1919 FAX (919) 851-8393
LICENSE #: F-0148

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

- 1604.01 Railroad Erosion Control Detail
- 1605.01 Temporary Silt Fence
- 1606.01 Special Sediment Control Fence
- 1607.01 Gravel Construction Entrance
- 1622.01 Temporary Berms and Slope Drains
- 1630.01 Riser Basin
- 1630.02 Silt Basin Type B
- 1630.03 Temporary Silt Ditch
- 1630.04 Stilling Basin
- 1630.05 Temporary Diversion
- 1630.06 Special Stilling Basin
- 1631.01 Matting Installation
- 1632.01 Rock Inlet Sediment Trap Type A
- 1632.02 Rock Inlet Sediment Trap Type B
- 1632.03 Rock Inlet Sediment Trap Type C
- 1633.01 Temporary Rock Silt Check Type A
- 1633.02 Temporary Rock Silt Check Type B
- 1634.01 Temporary Rock Sediment Dam Type A
- 1634.02 Temporary Rock Sediment Dam Type B
- 1635.01 Rock Pipe Inlet Sediment Trap Type A
- 1635.02 Rock Pipe Inlet Sediment Trap Type B
- 1640.01 Coir Fiber Baffle
- 1645.01 Temporary Stream Crossing

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

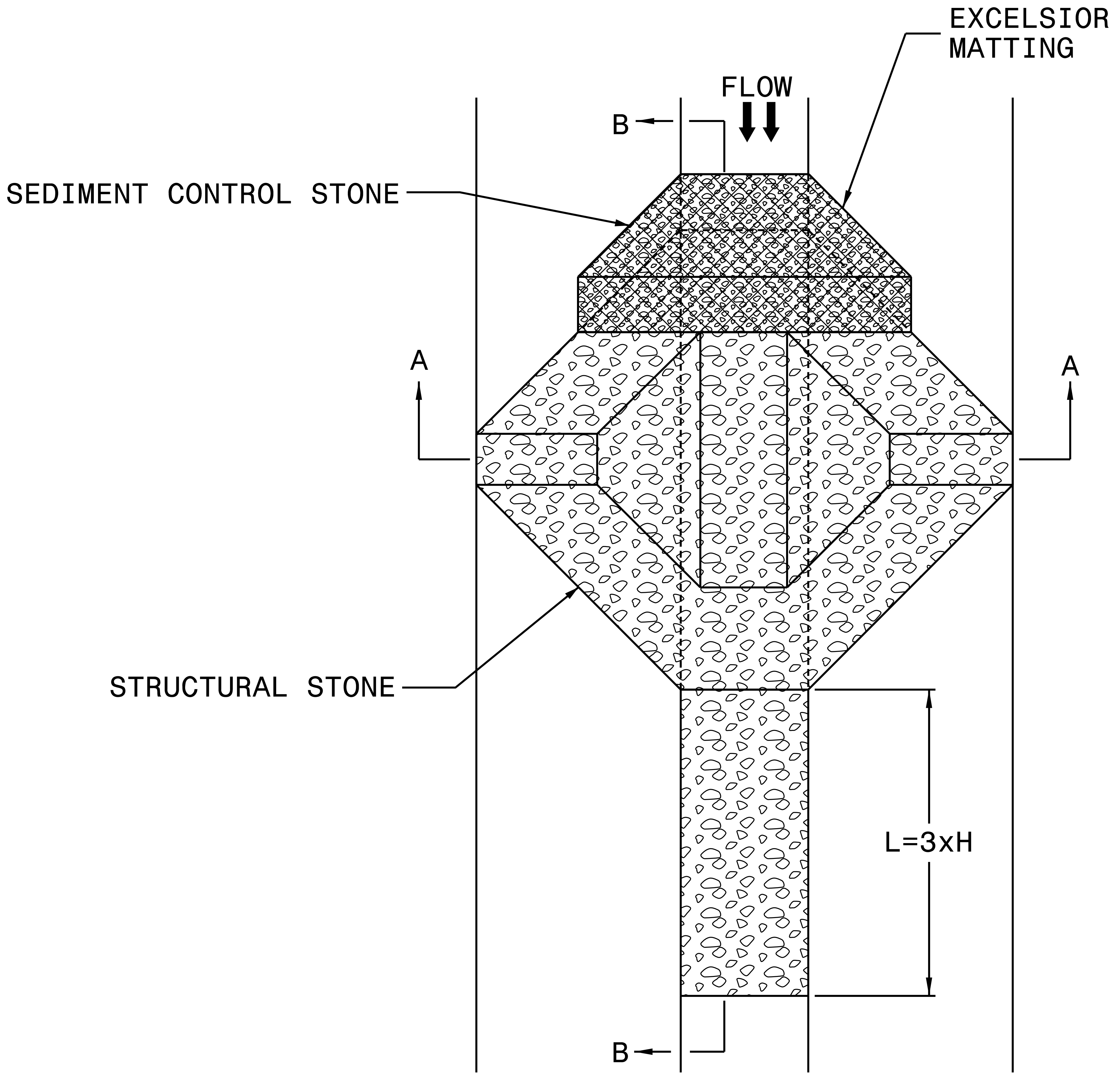
BRIDGE 750346

RELEASE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	*EC-2*
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GREENHORNE & O'MARA
CONSULTING ENGINEERS
5565 CENTERVIEW DRIVE, SUITE 107
RALEIGH, NC 27606
(919) 851-1919 FAX (919) 851-8393
LICENSE #: F-0148

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



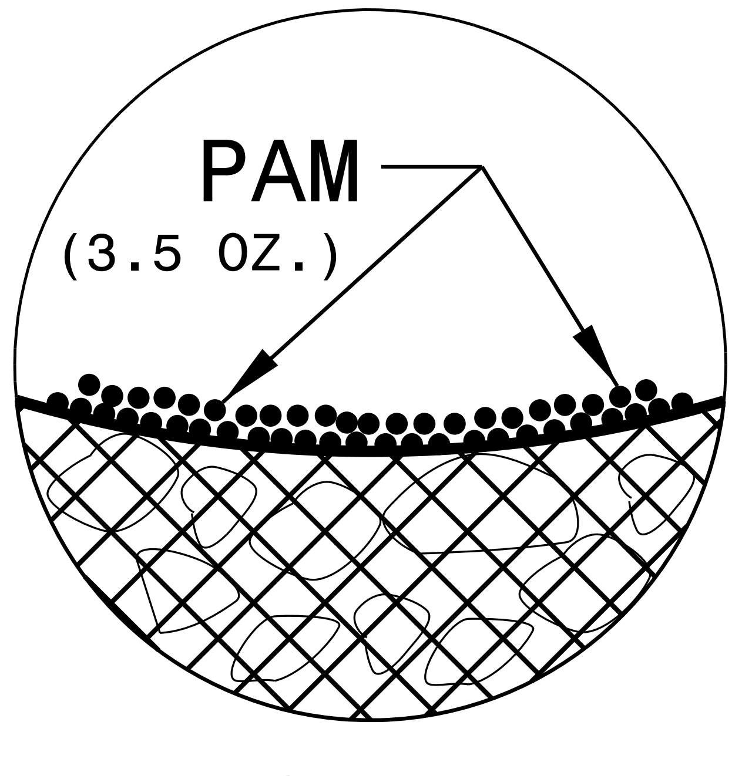
PLAN

NOTES

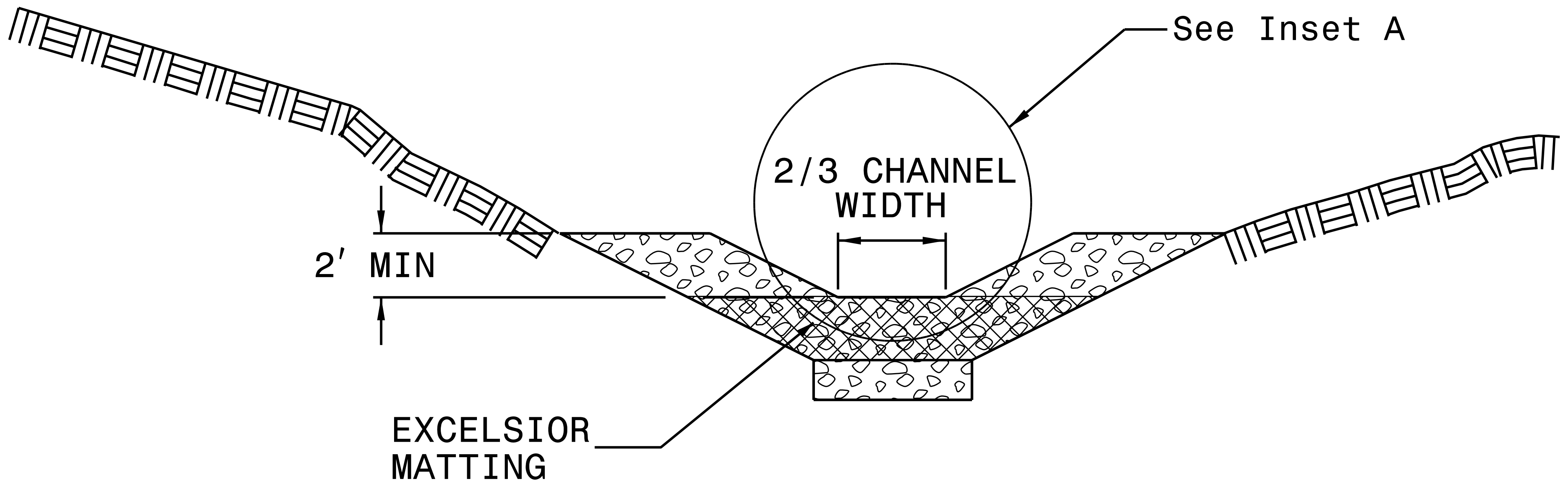
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

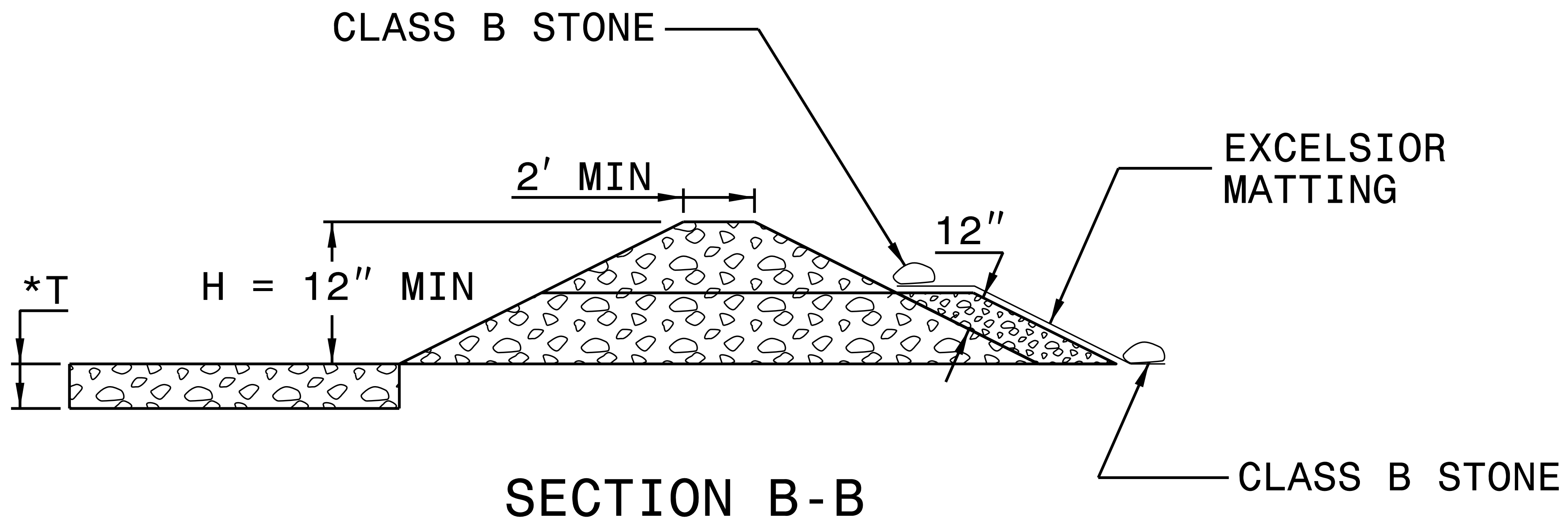
INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

*T = 12" MIN., 18" MAX.

NOT TO SCALE

BRIDGE 750346

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

RELEASE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	EC-3

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GREENHORNE & O'MARA
CONSULTING ENGINEERS
5565 CENTERVIEW DRIVE, SUITE 107
RALEIGH, NC 27606
(919) 851-1919 FAX (919) 851-8393
LICENSE #: F-0148

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

BRIDGE 750346

RELEASE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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CONSULTING ENGINEERS
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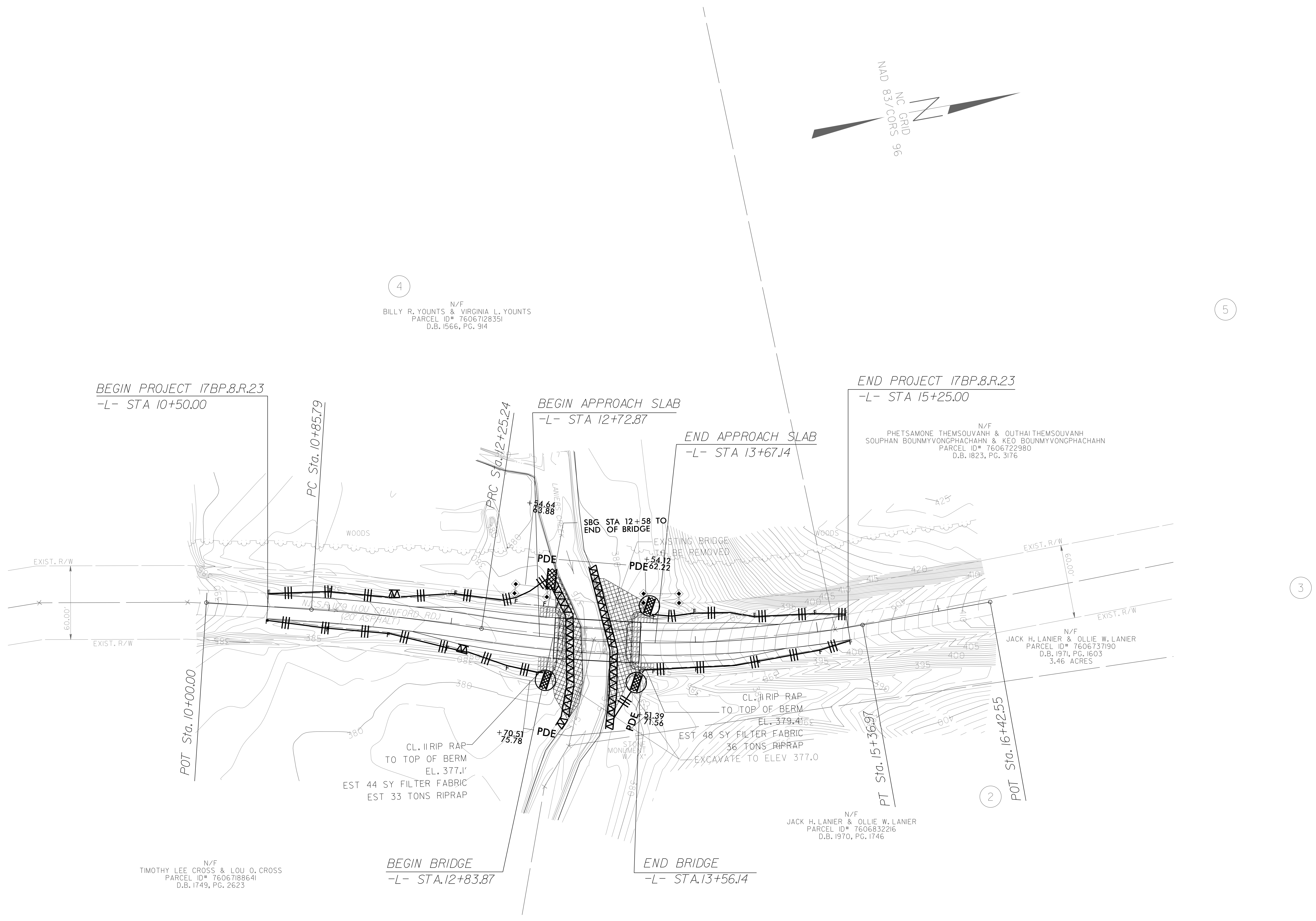
RALEIGH, NC 27606
(919) 851-1919 FAX (919) 851-8393
LICENSE #: F-0148

STEVEN BONDOR, PE
LEVEL III NAME

3077
LEVEL III CERTIFICATION NO.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4



BRIDGE 750346

RELEASE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.23	EC-5/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GREENHORNE & O'MARA
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STEVEN BONDOR, PE
LEVEL III NAME

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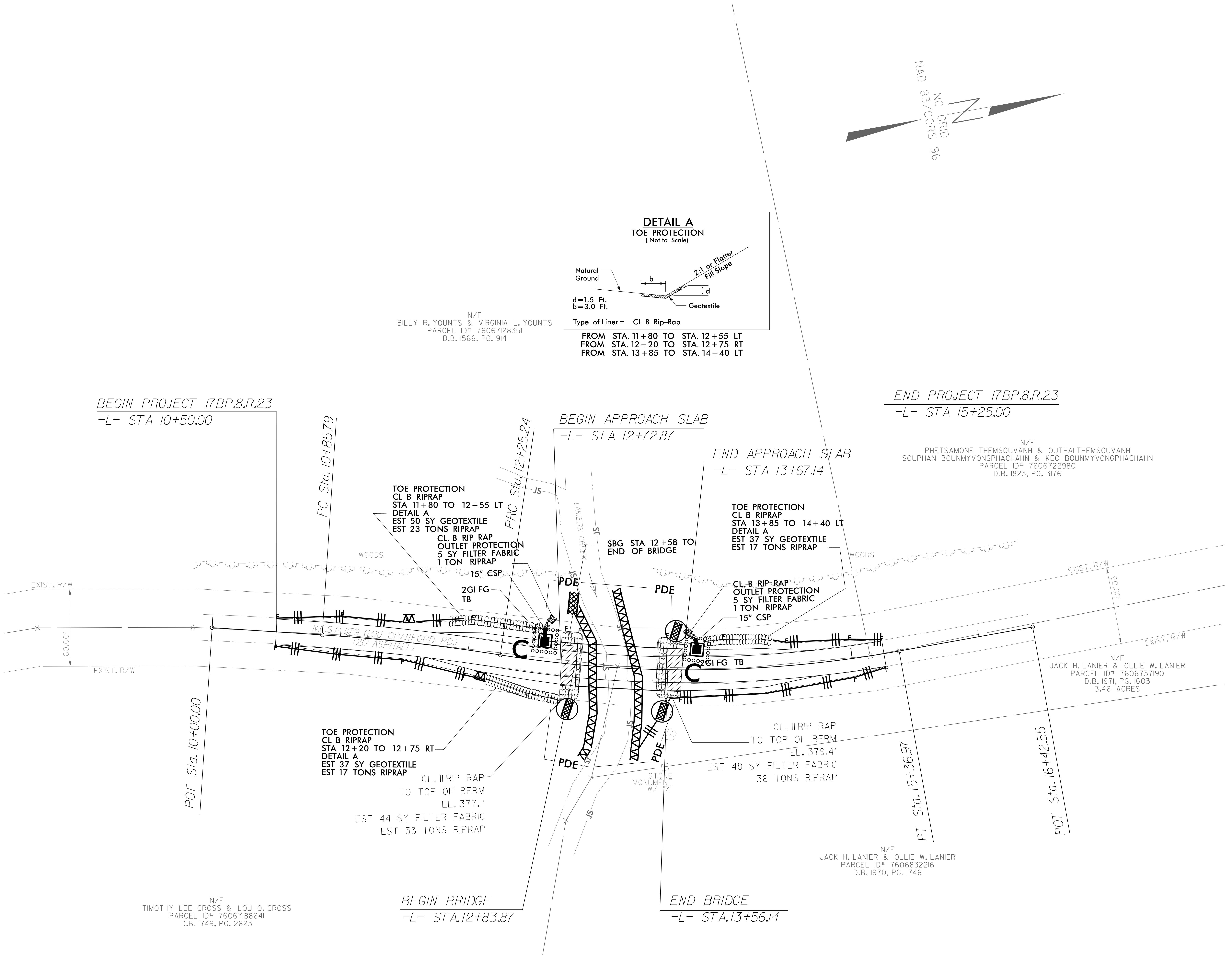
LEVEL III CERTIFICATION NO.



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.8.R.23	X-1

8/23/99

$$$$SYSTIME$$$$
$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.23	X-2

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.8.R.23	X-3

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

8/23/99

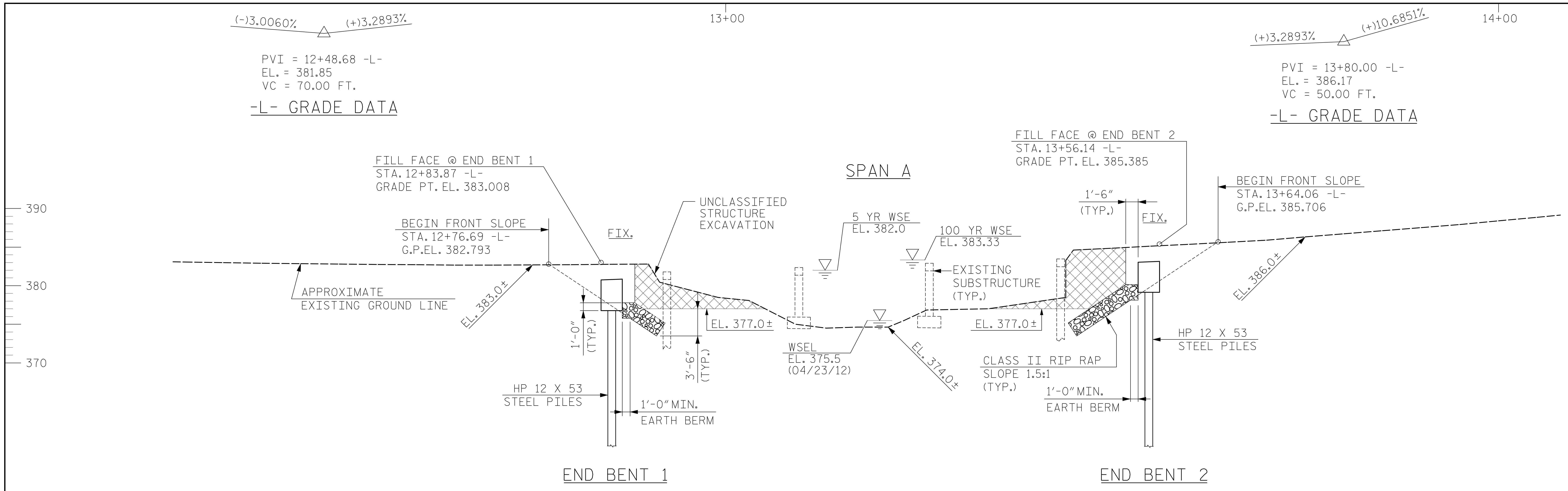
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.8.R.23	X-4

$$$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/23/99

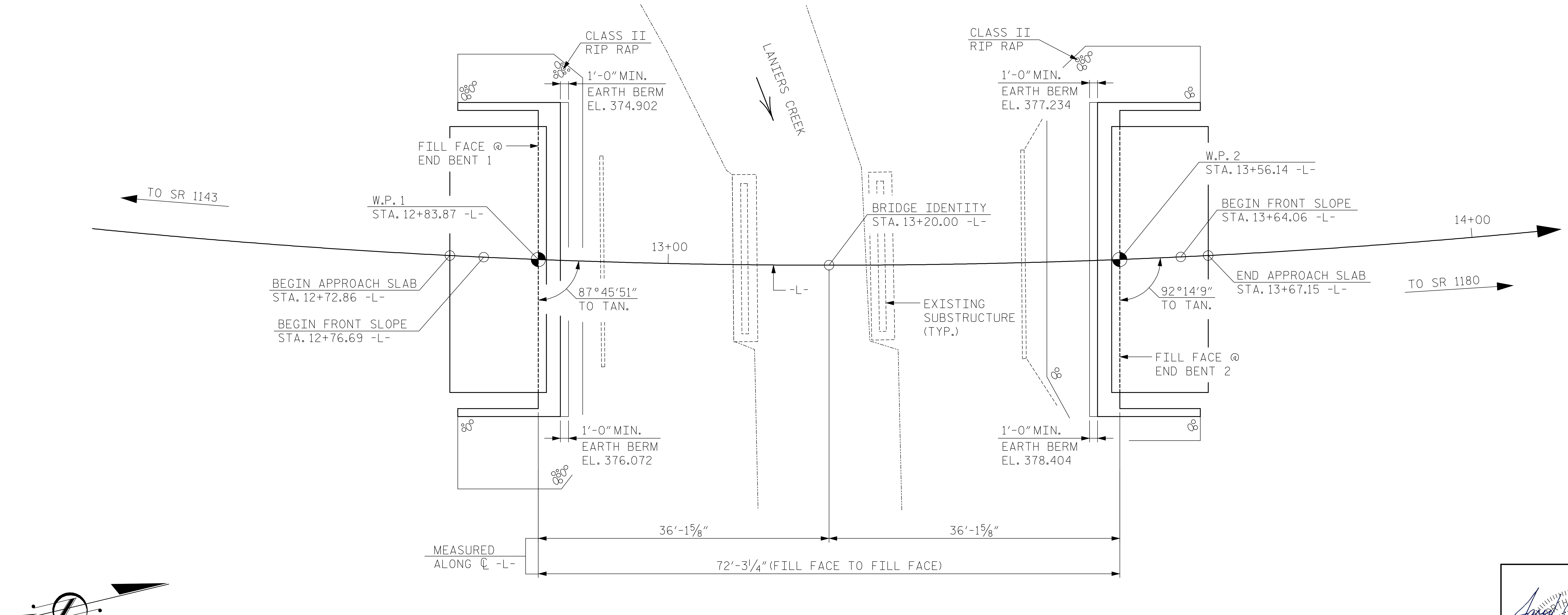
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.8.R.23	X-5

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$$



SECTION ALONG -L-

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS



PLAN

(PILES NOT SHOWN IN PLAN VIEW)

-L- HORIZONTAL CURVE DATA

PI STA 11+55.56	PI STA 13+82.59
Δ = 5°19'35.8" (RT)	Δ = 19°17'19.1" (LT)
D = 3°49'11.0"	D = 6°11'14.8"
L = 139.45'	L = 311.74'
T = 69.78'	T = 157.36'
R = 1,500.00'	R = 926.00'

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

SHEET 1 OF 4
REPLACES BRIDGE NO. 346

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1179
OVER LANIERS CREEK
BETWEEN SR 1143 AND SR 1180

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

Jared C. Medlin
SEAL 032954
JARED C. MEDLIN
6-4-13

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

REVISIONS

SHEET NO. S-1

SHEETS 15

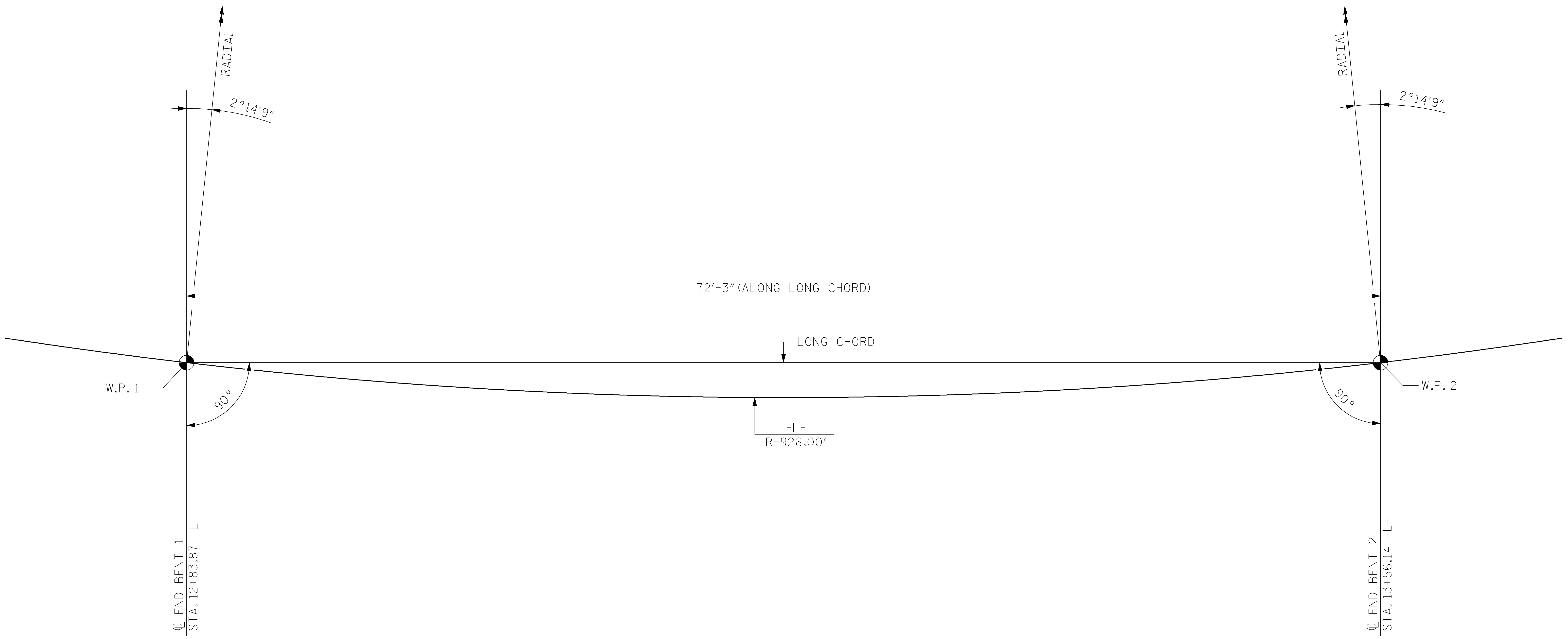
DRAWN BY : D.J.DICK DATE : OCT. 2012
CHECKED BY : J.C.MEDLIN DATE : OCT. 2012

Y:\Drawings\2011 DWGS\B11-10 (NCDOT Division 8)\750346\Structures\Final Plans\17BP.8.R.23_SD_GD_750346.dgn

5/3/2013

DJD

DJD 5/3/2013 Y:\Drawings\2011 DWGS\B11-10 (NCDOT Division 8)\750346\Structures\FinalPlans\17BP.8.R.23_SD_LC_750346.dgn



LONG CHORD LAYOUT

END BENTS ARE PARALLEL.

-L- HORIZONTAL CURVE DATA

PI STA 13+82.59
Δ = 19°17′19.1″(LT)
D = 6°11′14.8″
L = 311.74′
T = 157.36′
R = 926.00′

DRAWN BY : D.J.DICK DATE : OCT. 2012
CHECKED BY : J.C.MEDLIN DATE : OCT. 2012

KCI
ASSOCIATES OF NC

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

Jared C. Medlin
SEAL
032954
JARED C. MEDLIN
6-4-13

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

SHEET 2 OF 4 REPLACES BRIDGE NO. 346

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

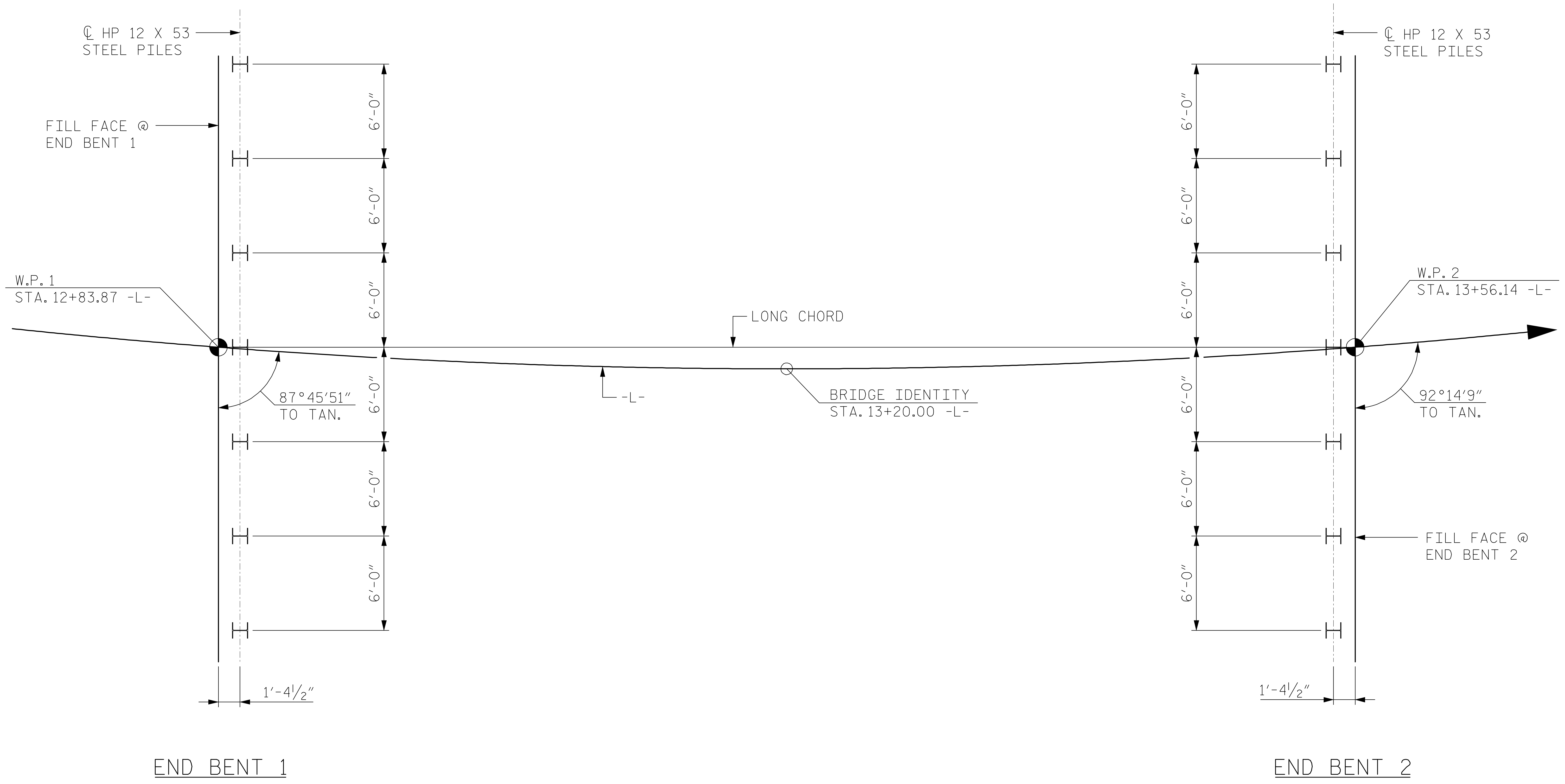
FOR BRIDGE ON SR 1179
OVER LANIERS CREEK
BETWEEN SR 1143 AND SR 1180

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-2

SHEETS
15



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO CENTERLINE OF PILES)

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 & END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 81 TONS PER PILE.

PREDRILLING FOR PILES IS REQUIRED AT END BENT NO.1 (CENTER TO RIGHT). PREDRILL PILE LOCATIONS TO ELEVATION 371.5 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 12". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PREDRILLING FOR PILES IS REQUIRED AT END BENT NO.2 (CENTER TO RIGHT). PREDRILL PILE LOCATIONS TO ELEVATION 374.5 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 12". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.1 AND END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1179
OVER LANIERS CREEK
BETWEEN SR 1143 AND SR 1180

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

Jared C. Medlin
SEAL
032954
JARED C. MEDLIN
6-4-13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			SHEETS
2			4			15

DRAWN BY : D.J.DICK DATE : OCT. 2012
CHECKED BY : J.C.MEDLIN DATE : OCT. 2012

DJD 5/3/2013 Y:\Drawings\2011 DWGS\B11-10 (NCDOT Division 8)\750346\Structures\FinalPlans\17BP.8.R.23_SD_FL_750346.dgn

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE @ STA. 13+20.00 -L-	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		PREDRILLING FOR PILES	STEEL PILE POINTS	CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	PLAIN RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	LIN.FT.	EA.	LIN.FT.	LUMP SUM	TONS	SQ. YDS.	NO.	LIN.FT.
SUPERSTRUCTURE				LUMP SUM						140.25	LUMP SUM			11	770.0
END BENT NO. 1		LUMP SUM	21.8		2636	7	91.0	24	7			60.1	66.8		
END BENT NO. 2		LUMP SUM	21.8		2636	7	91.0	28	7			71.8	79.8		
TOTAL	LUMP SUM	LUMP SUM	43.6	LUMP SUM	5272	14	182.0	52	14	140.25	LUMP SUM	131.9	146.6	11	770.0

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATION SCOUR AT BRIDGES", MAY, 2001.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

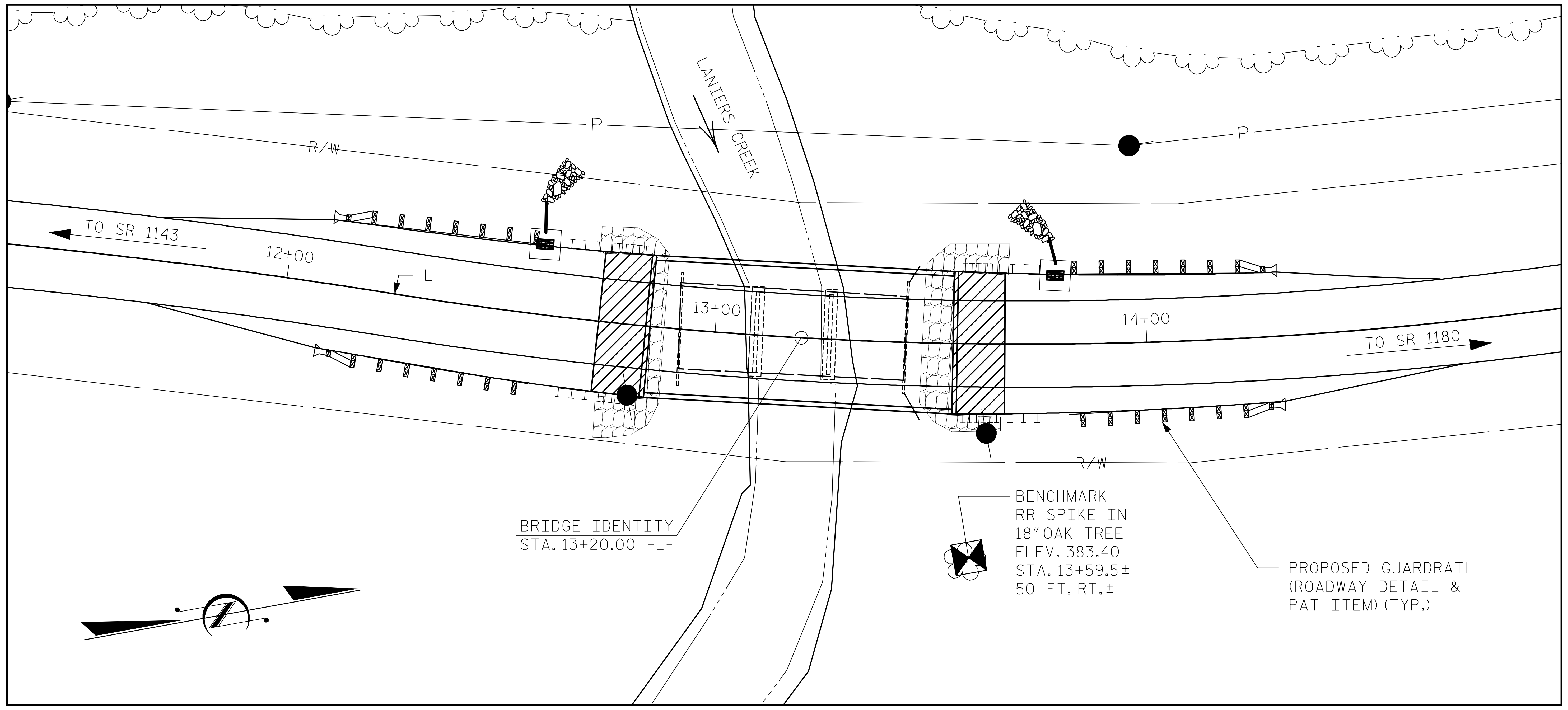
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE = 1,230 CFS
FREQUENCY = 5 YRS
DESIGN HIGH WATER = 382.0
DRAINAGE AREA = 9.8 SQ.MI.
BASE DISCHARGE (Q100) = 3,096 CFS
BASE HIGH WATER ELEVATION = 383.33

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 1,630 CFS
FREQUENCY OF OVERTOPPING FLOOD = 10 YRS
OVERTOPPING FLOOD ELEVATION = 382.7



LOCATION SKETCH

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

DRAWN BY : D.J.DICK DATE : OCT. 2012
CHECKED BY : J.C.MEDLIN DATE : OCT. 2012

5/20/2013 Y:\Drawings\2011 DWGS\B11-10 (NCDOT Division 8)\750346\Structures\FinalPlans\17BP.8.R.23_SD_LOC_750346.dgn

DJD

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

SHEET 4 OF 4

KCI ASSOCIATES OF NC
KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

Jared C. Medlin
SEAL 032954
JARED C. MEDLIN
6-4-13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1179
OVER LANIERS CREEK
BETWEEN SR 1143 AND SR 1180

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-4
SHEETS 15

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

							STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						
								MOMENT					SHEAR						MOMENT					
LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	COMMENT NUMBER
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.006	--	1.75	0.273	1.03	70′	EL	34.5	0.507	1.32	70′	EL	6.9	0.80	0.273	**1.01**	70′	EL	**34.5**	
		HL-93(Opr)	N/A	--	1.341	--	1.35	0.273	1.34	70′	EL	34.5	0.507	1.72	70′	EL	6.9	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.306	47.02	1.75	0.273	1.34	70′	EL	34.5	0.507	1.65	70′	EL	6.9	0.80	0.273	**1.31**	70′	EL	**34.5**	
		HS-20(Opr)	36.000	--	1.74	62.64	1.35	0.273	1.74	70′	EL	34.5	0.507	2.14	70′	EL	6.9	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.917	39.379	1.4	0.273	3.75	70′	EL	34.5	0.507	4.87	70′	EL	6.9	0.80	0.273	2.92	70′	EL	34.5	
		SNGARBS2	20.000	--	2.187	43.741	1.4	0.273	2.81	70′	EL	34.5	0.507	3.47	70′	EL	6.9	0.80	0.273	2.19	70′	EL	34.5	
		SNAGRIS2	22.000	--	2.077	45.69	1.4	0.273	2.67	70′	EL	34.5	0.507	3.23	70′	EL	6.9	0.80	0.273	2.08	70′	EL	34.5	
		SNCOTTS3	27.250	--	1.452	39.565	1.4	0.273	1.87	70′	EL	34.5	0.507	2.43	70′	EL	6.9	0.80	0.273	1.45	70′	EL	34.5	
		SNAGGRS4	34.925	--	1.218	42.554	1.4	0.273	1.57	70′	EL	34.5	0.507	2.03	70′	EL	6.9	0.80	0.273	1.22	70′	EL	34.5	
		SNS5A	35.550	--	1.191	42.346	1.4	0.273	1.53	70′	EL	34.5	0.507	2.06	70′	EL	6.9	0.80	0.273	1.19	70′	EL	34.5	
		SNS6A	39.950	--	1.095	43.747	1.4	0.273	1.41	70′	EL	34.5	0.507	1.88	70′	EL	6.9	0.80	0.273	1.10	70′	EL	34.5	
		SNS7B	42.000	--	1.043	43.801	1.4	0.273	1.34	70′	EL	34.5	0.507	1.85	70′	EL	6.9	0.80	0.273	1.04	70′	EL	34.5	
	TTST	TNAGRIT3	33.000	--	1.336	44.087	1.4	0.273	1.72	70′	EL	34.5	0.507	2.23	70′	EL	6.9	0.80	0.273	1.34	70′	EL	34.5	
		TNT4A	33.075	--	1.342	44.401	1.4	0.273	1.72	70′	EL	34.5	0.507	2.17	70′	EL	6.9	0.80	0.273	1.34	70′	EL	34.5	
		TNT6A	41.600	--	1.1	45.746	1.4	0.273	1.41	70′	EL	34.5	0.507	1.98	70′	EL	6.9	0.80	0.273	1.10	70′	EL	34.5	
		TNT7A	42.000	--	1.106	46.462	1.4	0.273	1.42	70′	EL	34.5	0.507	1.94	70′	EL	6.9	0.80	0.273	1.11	70′	EL	34.5	
		TNT7B	42.000	--	1.147	48.18	1.4	0.273	1.47	70′	EL	34.5	0.507	1.8	70′	EL	6.9	0.80	0.273	1.15	70′	EL	34.5	
		TNAGRIT4	43.000	--	1.089	46.838	1.4	0.273	1.4	70′	EL	34.5	0.507	1.74	70′	EL	6.9	0.80	0.273	1.09	70′	EL	34.5	
		TNAGT5A	45.000	--	1.026	46.175	1.4	0.273	1.32	70′	EL	34.5	0.507	1.74	70′	EL	6.9	0.80	0.273	1.03	70′	EL	34.5	
		TNAGT5B	45.000	3	1.013	45.579	1.4	0.273	1.3	70′	EL	34.5	0.507	1.66	70′	EL	6.9	0.80	0.273	**1.01**	70′	EL	**34.5**	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

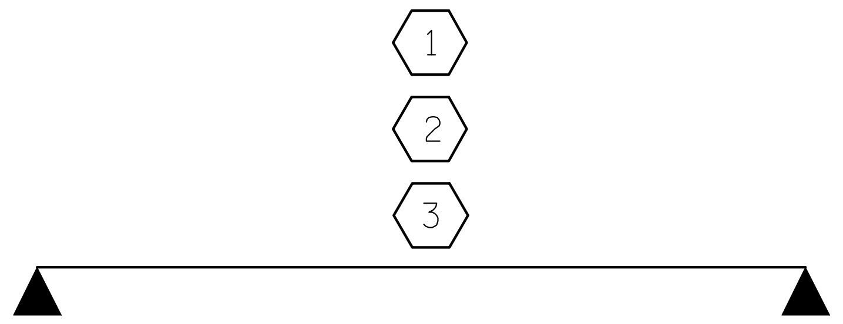
1.
2.
3.
4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)
2 DESIGN LOAD RATING (HS-20)
3 LEGAL LOAD RATING ✻✻
✻✻ SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN 'A'

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 70′ CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

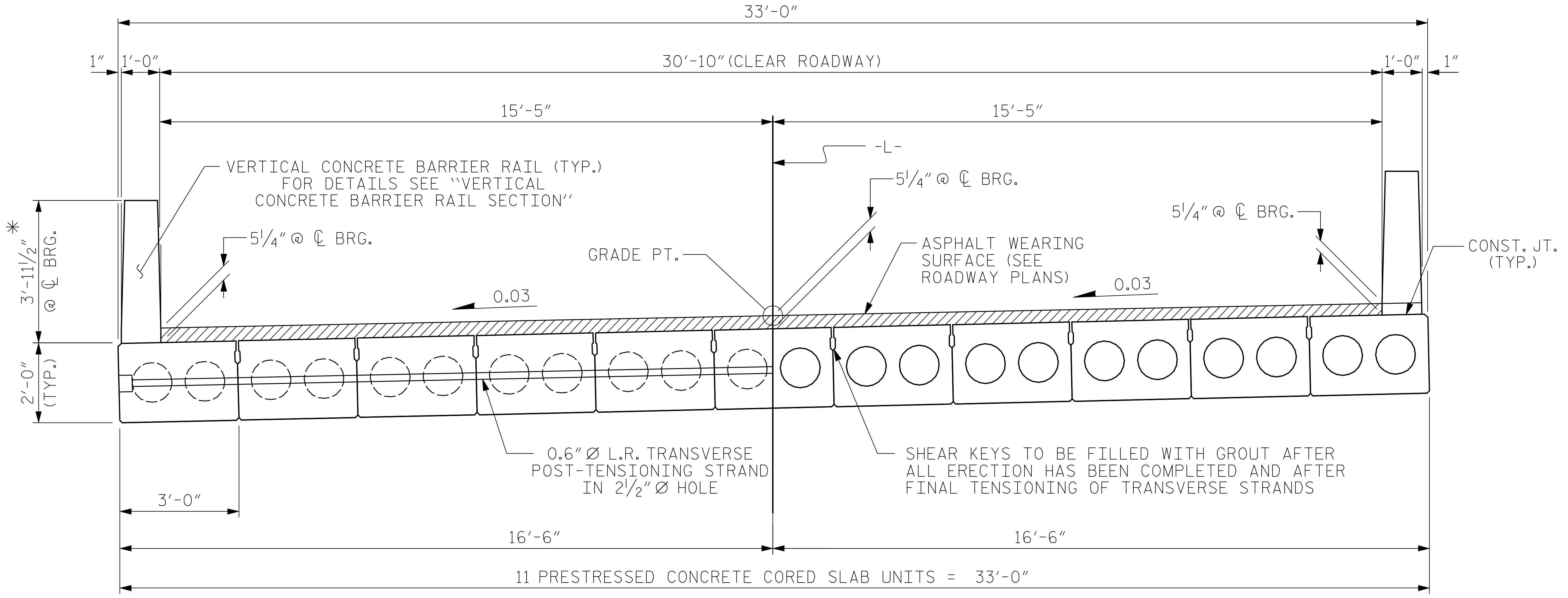
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			15

Jared C. Medlin
SEAL 032954
JARED C. MEDLIN
6-4-13

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

ASSEMBLED BY : DJD DATE : 1/13
CHECKED BY : JCM DATE : 1/13
DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

STD. NO. 21LRFR1_60&120S_25L



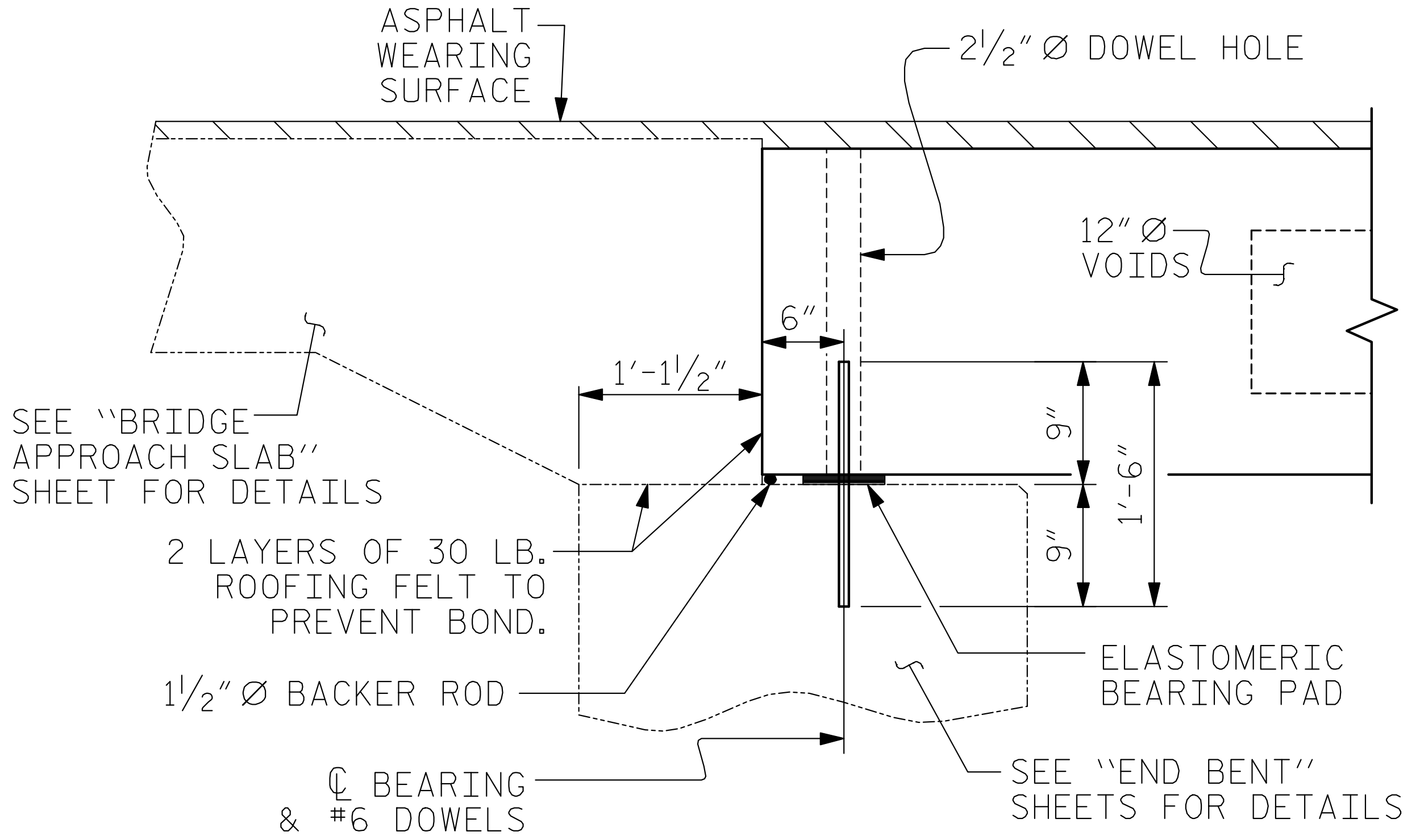
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

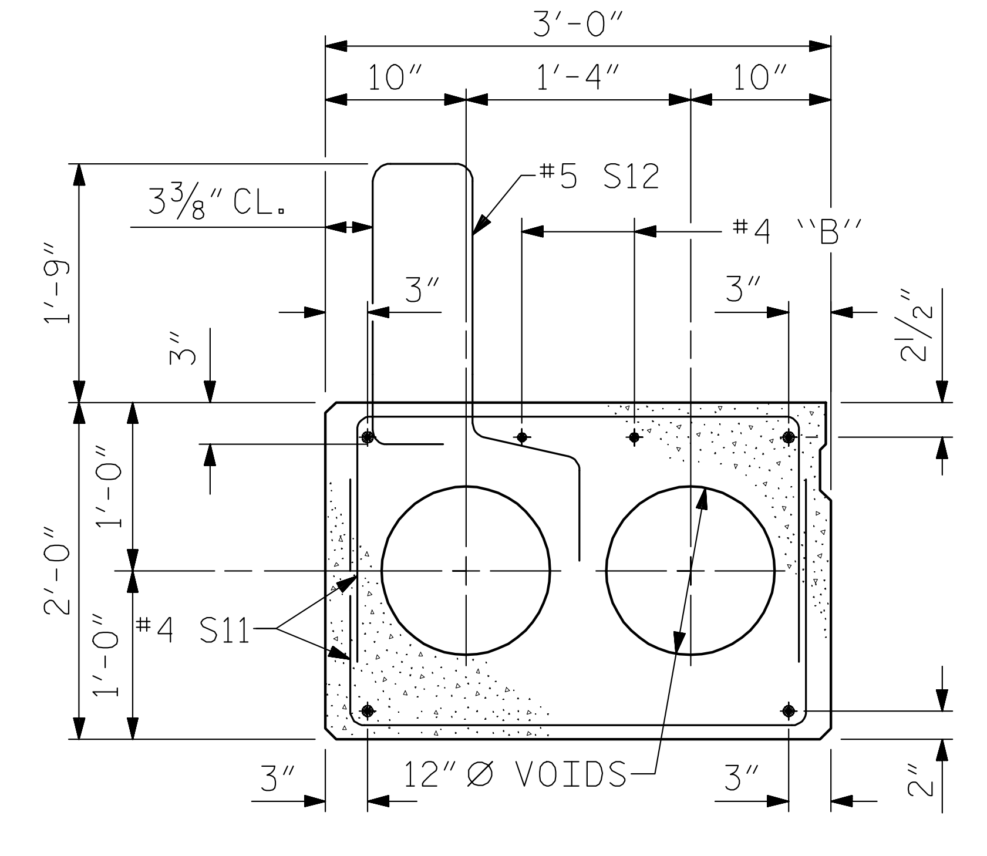
HALF SECTION
THROUGH VOIDS

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END

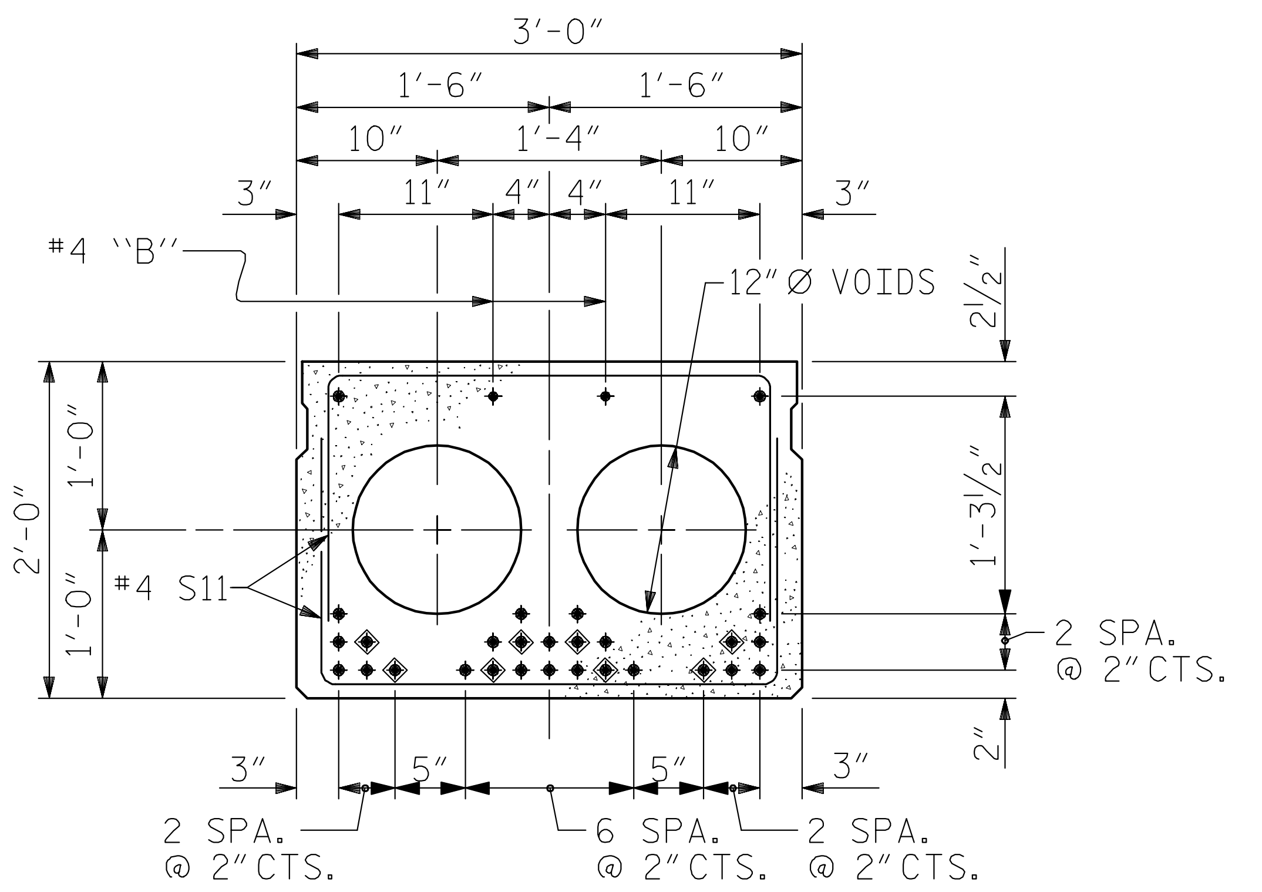


SECTION AT END BENT



EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



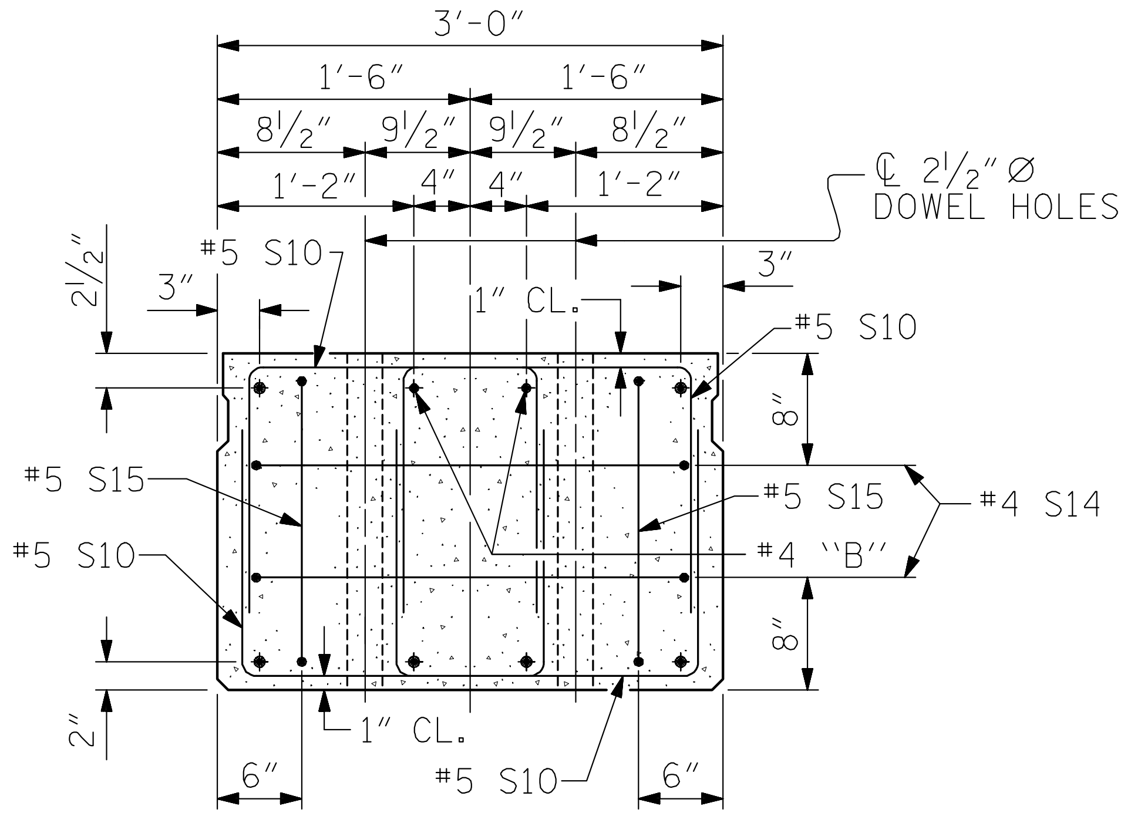
INTERIOR SLAB SECTION (70' UNIT)

(28 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

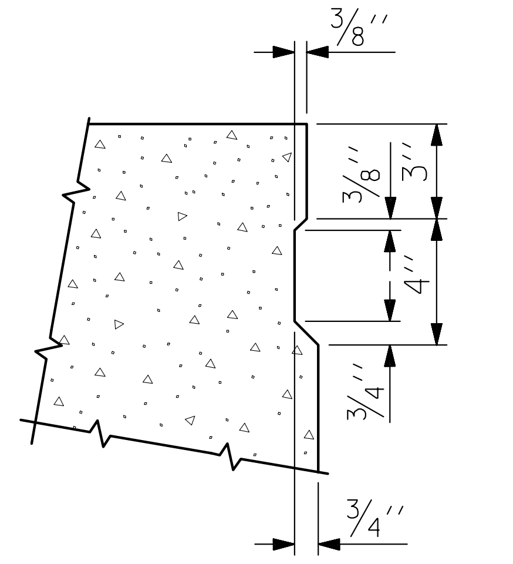
◈ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



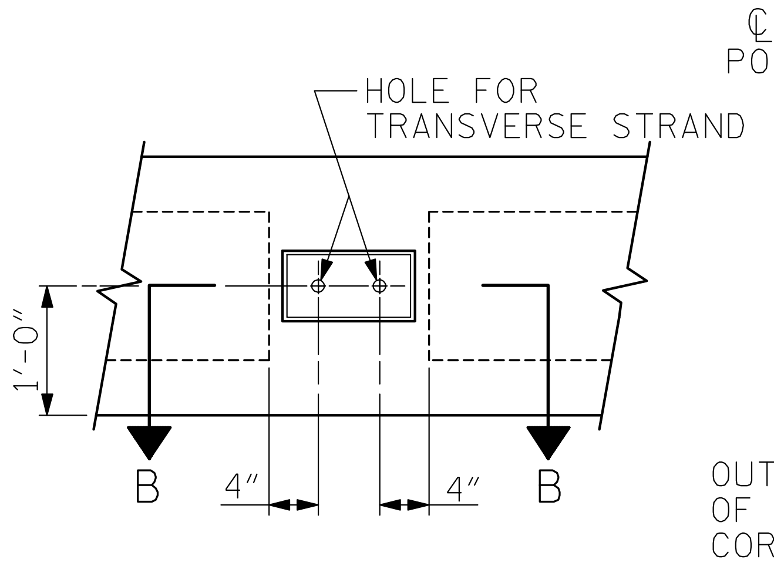
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

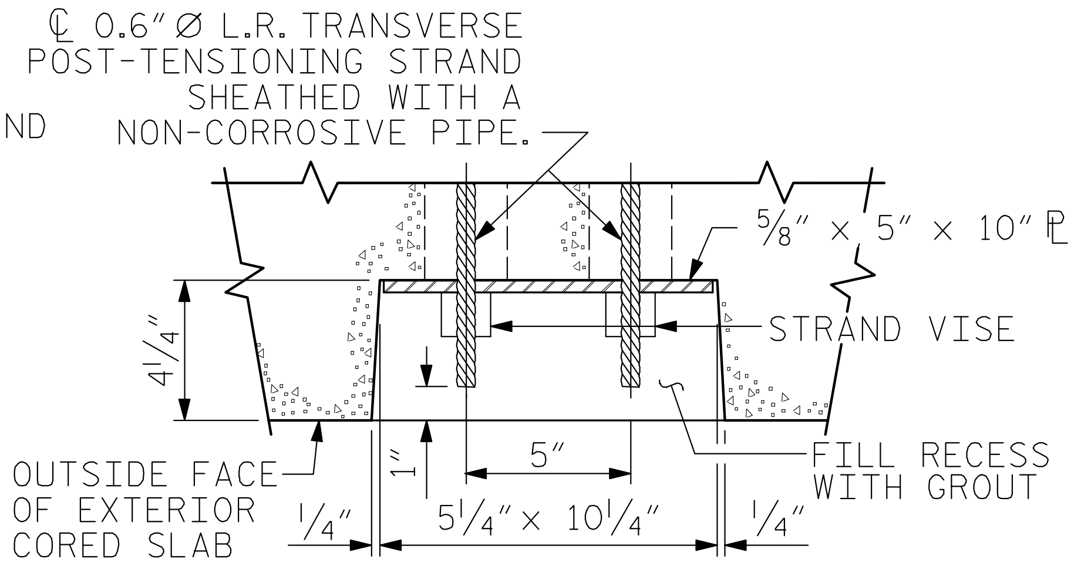


SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



ELEVATION VIEW



SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND·CORED SLABS

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

KCI
ASSOCIATES OF NC

Jared C. Medlin
SEAL 032954
JARED C. MEDLIN
6-4-13

ASSEMBLED BY :	JCM	DATE :	09/12
CHECKED BY :	JDF	DATE :	09/12

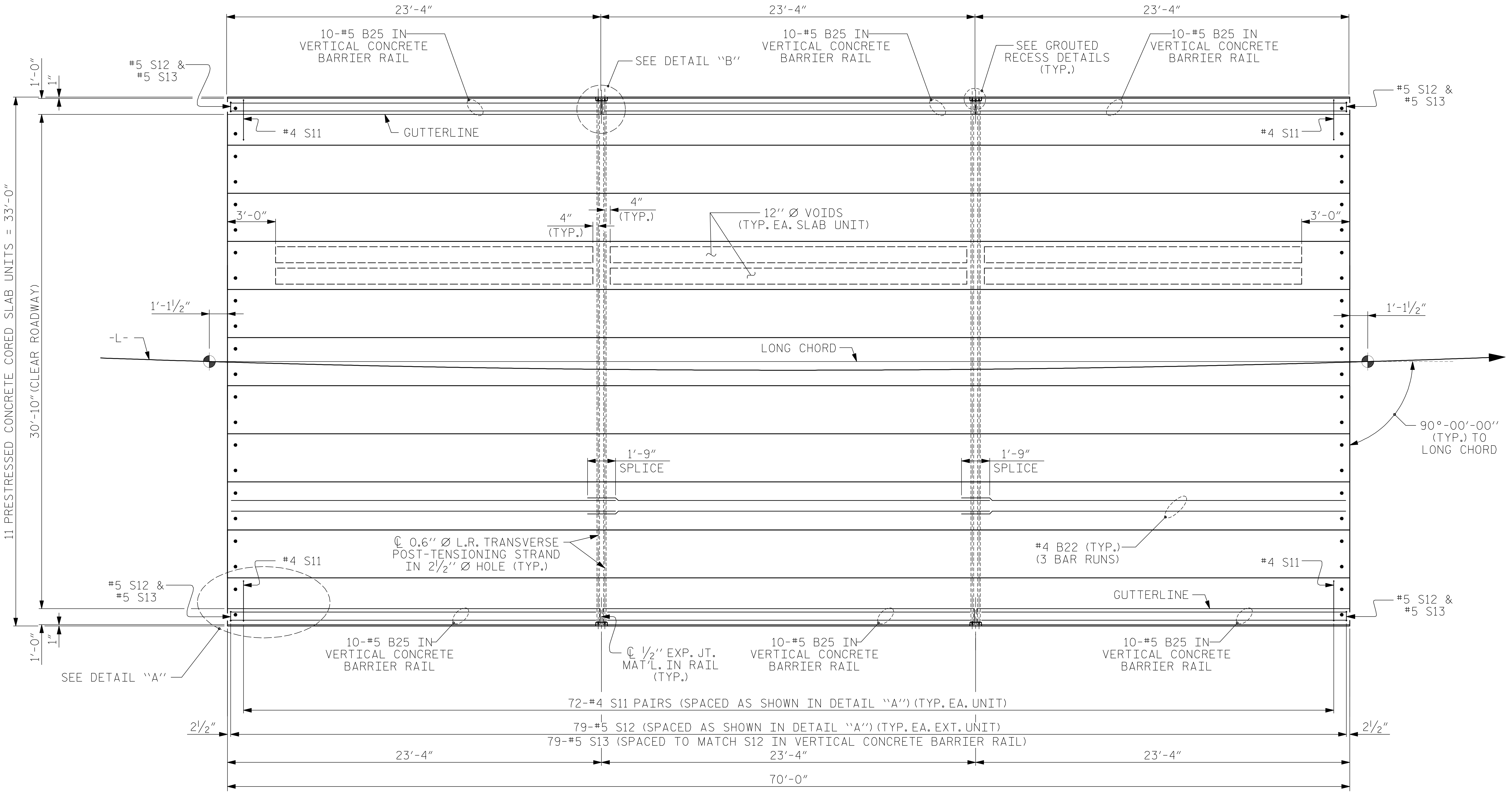
DRAWN BY : DGE 5/09	REV. 12/11	MAA/AAC
CHECKED BY : BCH 6/09		

REVISIONS

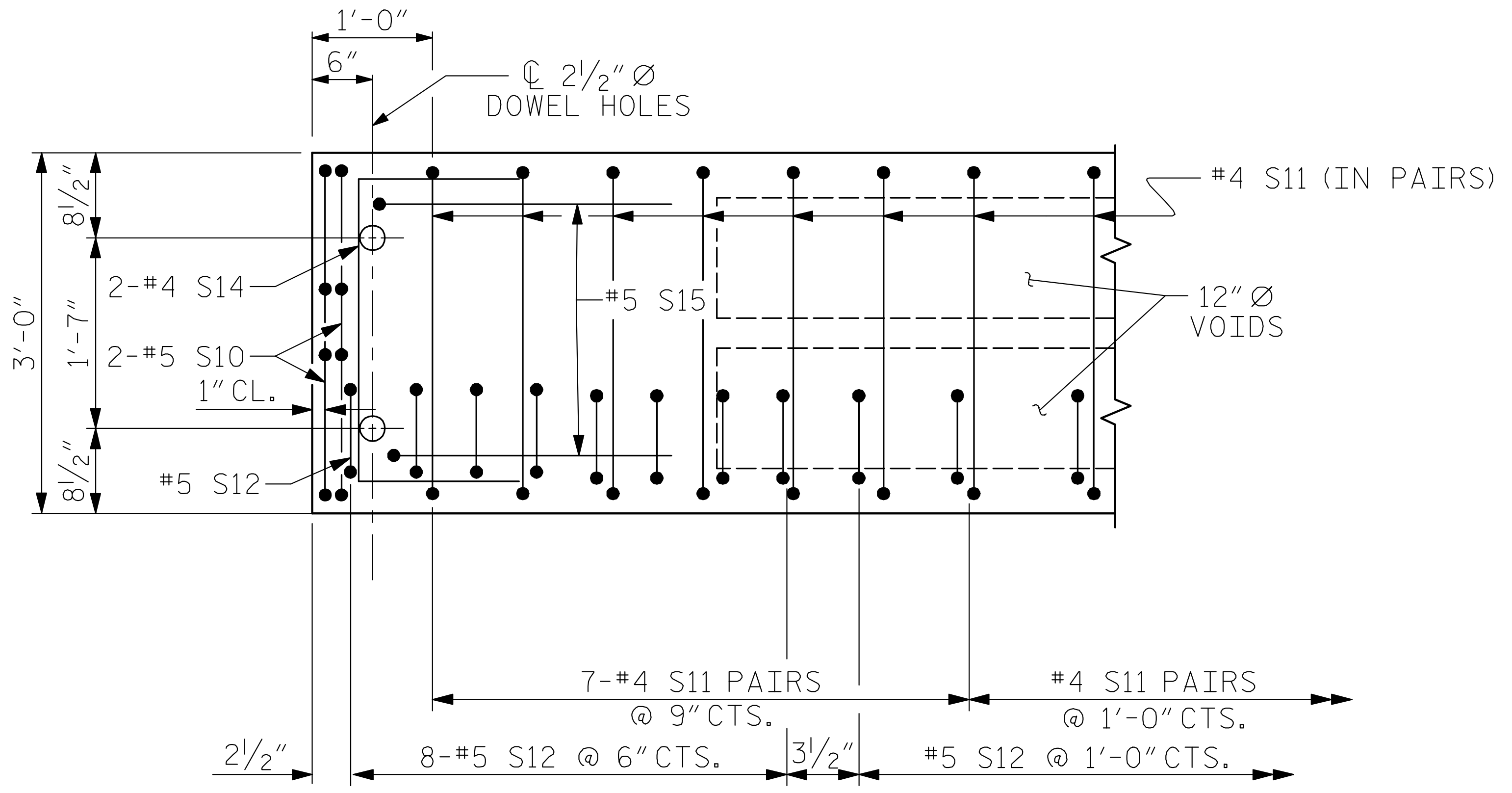
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-6
TOTAL SHEETS
15

STD. NO. 24PCS4_33_90S

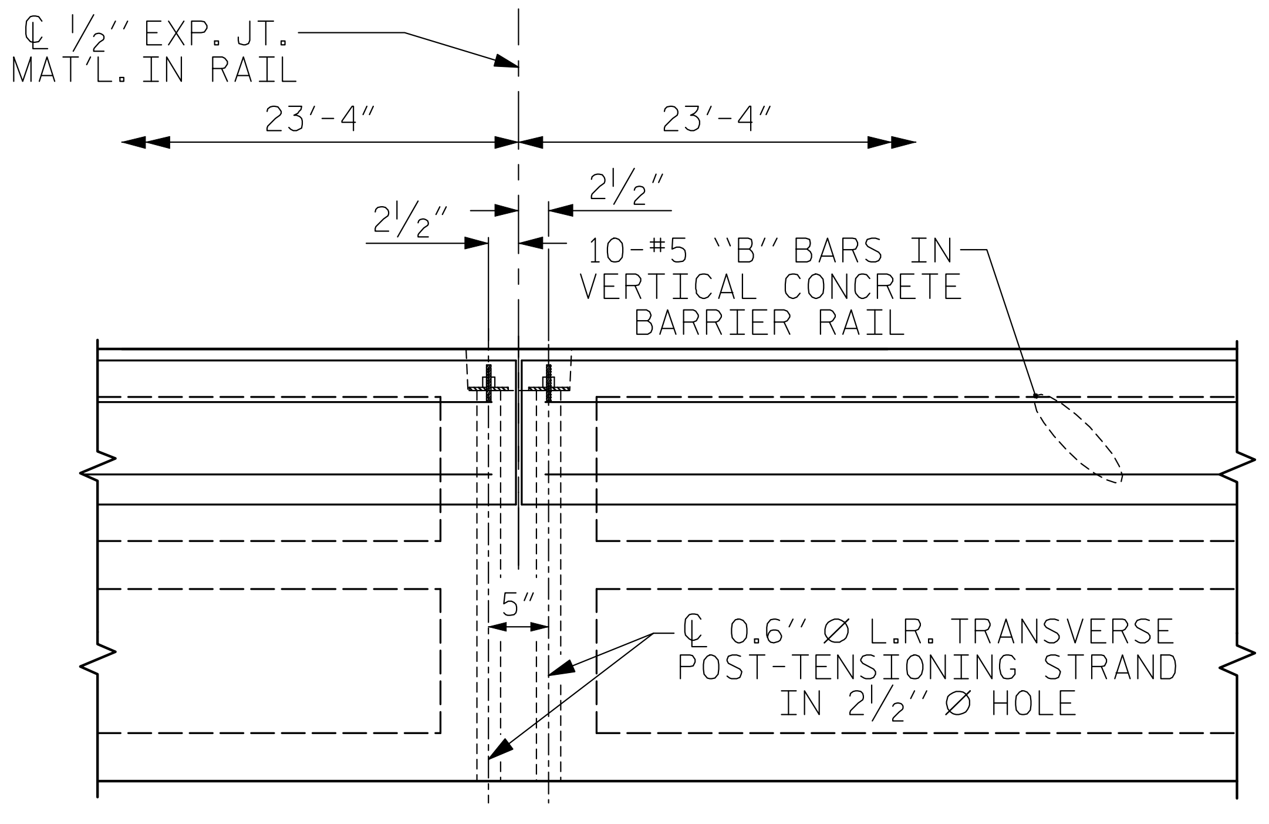


PLAN OF UNIT



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2½" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 70' UNIT
30'-10" CLEAR ROADWAY
90° SKEW

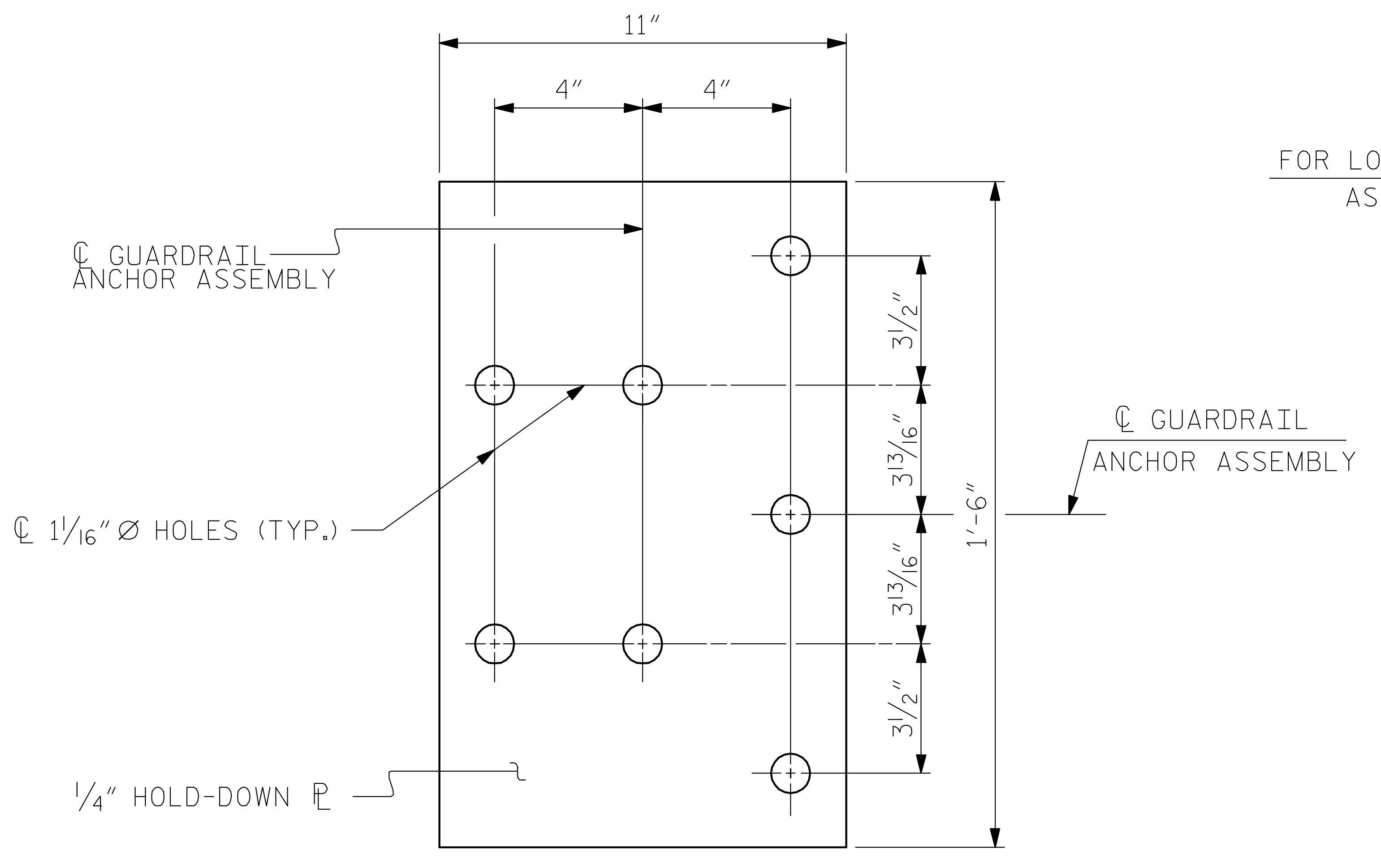
KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764
KCI ASSOCIATES OF NC

Jared C. Medlin
032954
6-4-13

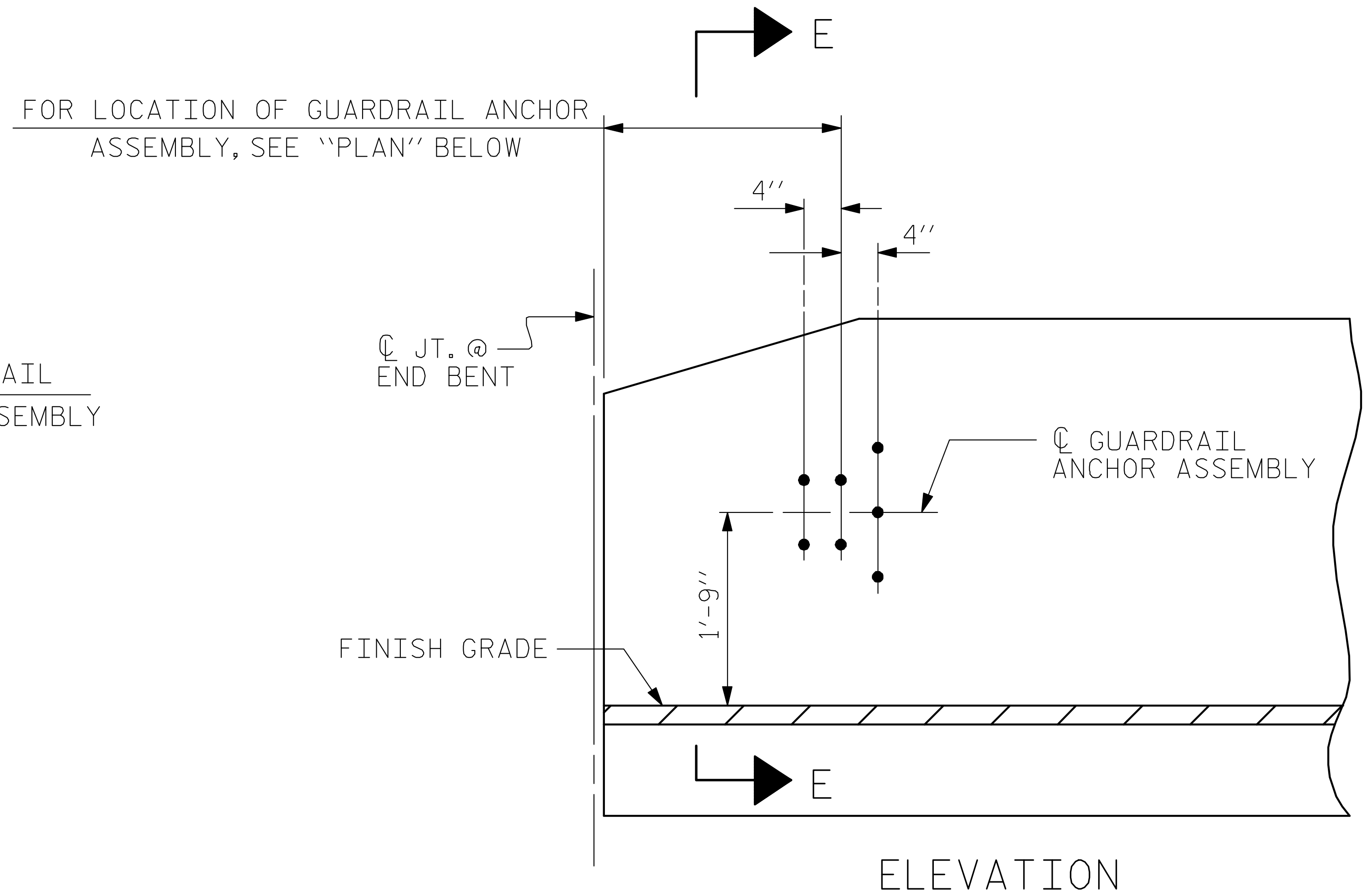
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY :	DJD	DATE :	1/13
CHECKED BY :	JCM	DATE :	1/13
DRAWN BY : MAA 6/10	REV. 12/5/11	MAA/AAC	
CHECKED BY : MKT 7/10			

STD. NO. 24PCS_33_90S_70L



PLAN



ELEVATION

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼″ HOLD DOWN PLATE AND 7 - ⅞″ Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ⅞″ Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

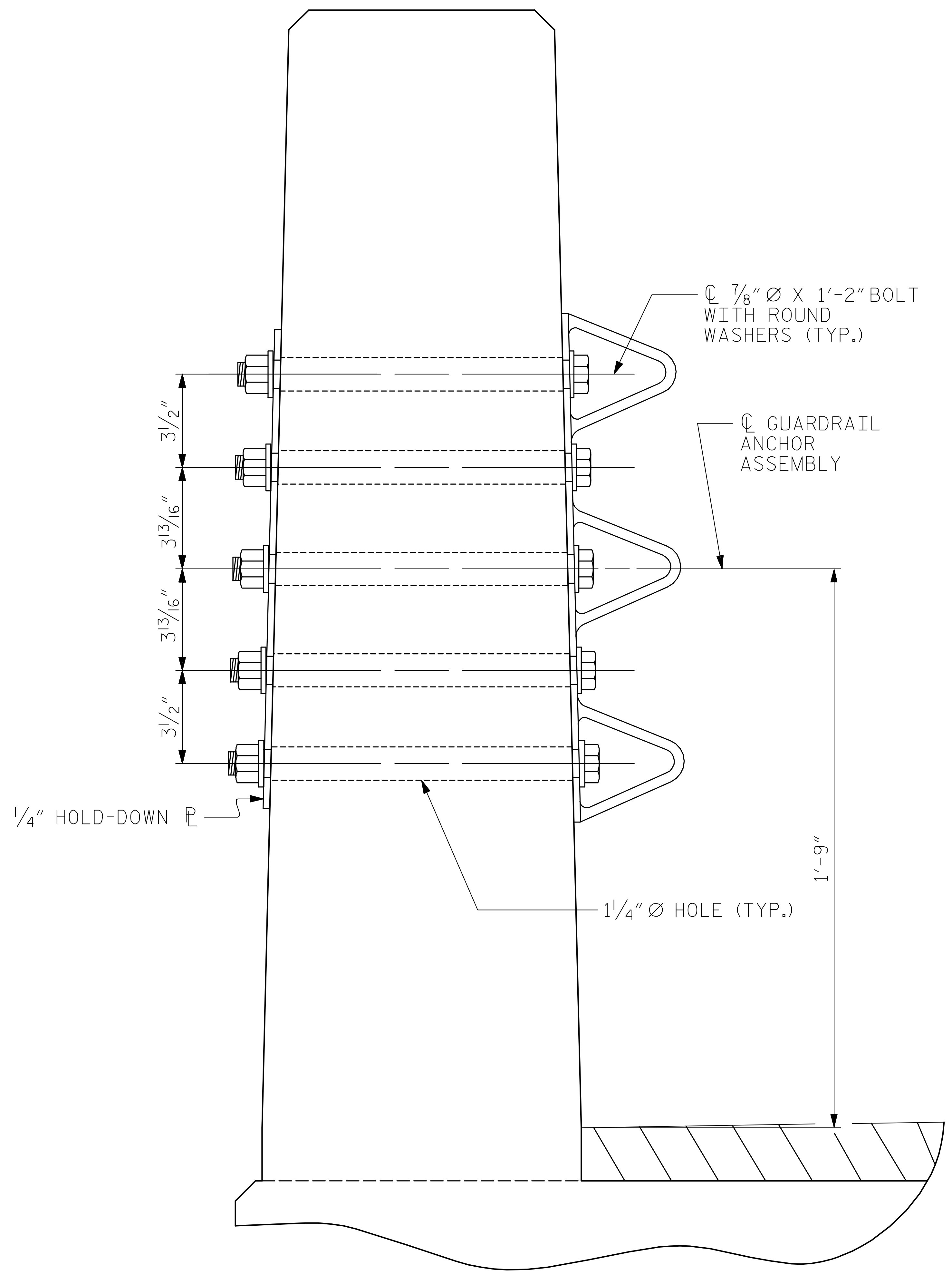
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

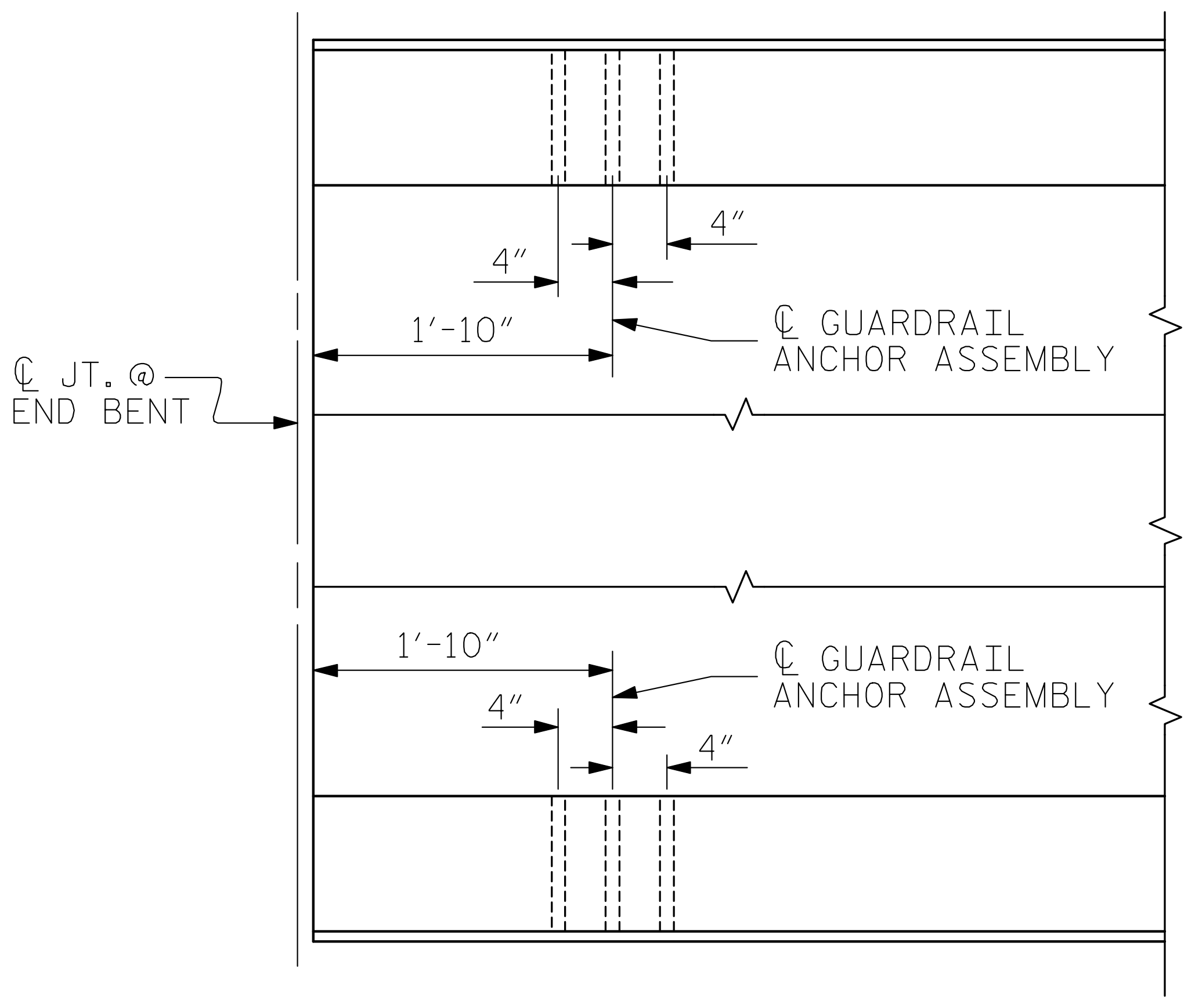
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1¼″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SECTION E-E

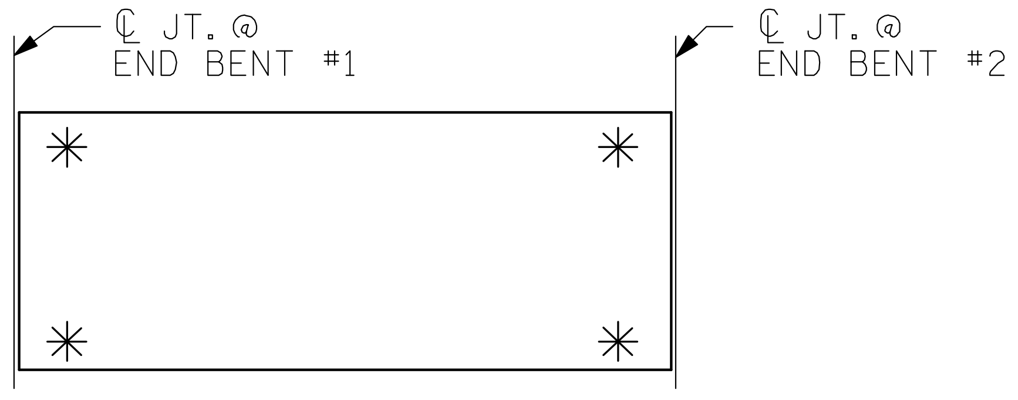
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

SEAL 032954
JARED C. MEDLIN
6-4-13

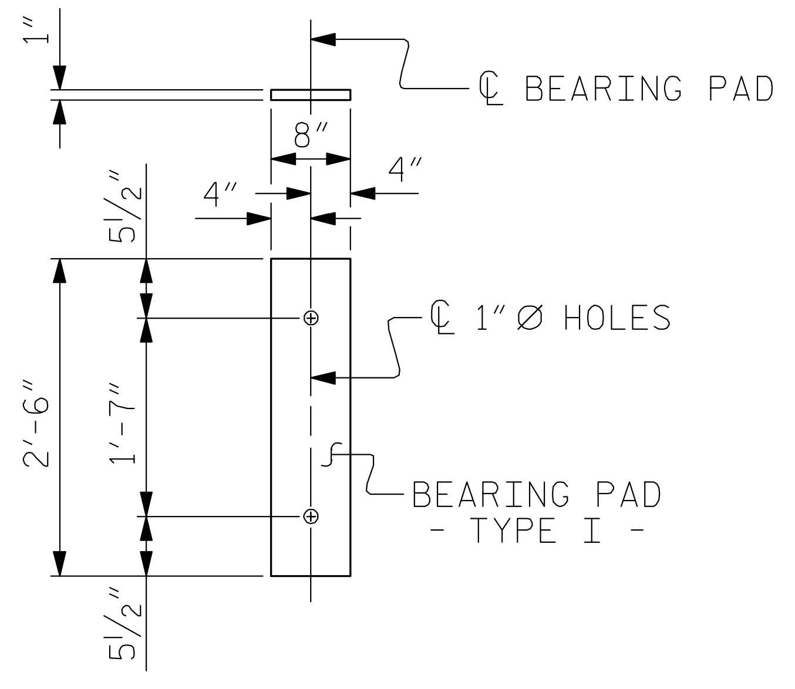
ASSEMBLED BY :	DJD	DATE :	11/12
CHECKED BY :	JCM	DATE :	11/12
DRAWN BY :	MAA 5/10	ADDED 5/6/10	
CHECKED BY :	GM 5/10		

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-8
TOTAL SHEETS 15

STD. NO. GRA3



FIXED END
(TYPE I - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

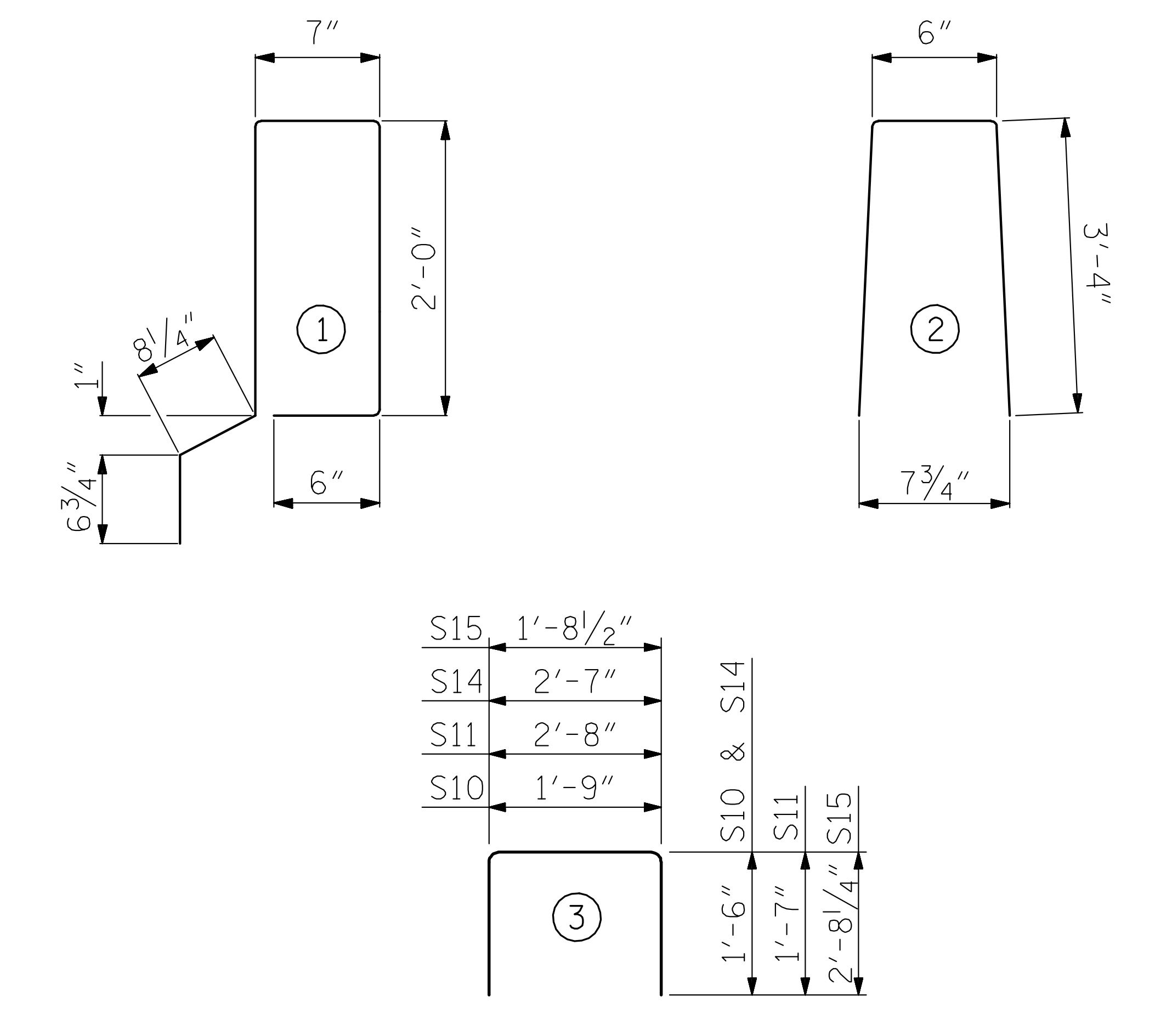
GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CORED SLABS REQUIRED	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	9	70'-0"	630'-0"
TOTAL	11		770'-0"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
70' UNITS	5500

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
70' UNITS	1¾"	3'-8"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	144	#4	3	5'-10"	561	5'-10"	561
✳S12	79	#5	1	6'-4"	522		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL	LBS.				744		744
✳EPOXY COATED REINFORCING STEEL	LBS.				522		
7000 P.S.I. CONCRETE	CU. YDS.				11.8		11.8
0.6" Ø L.R. STRANDS	No.				28		28

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE ‘‘CONCRETE RELEASE STRENGTH’’ TABLE.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

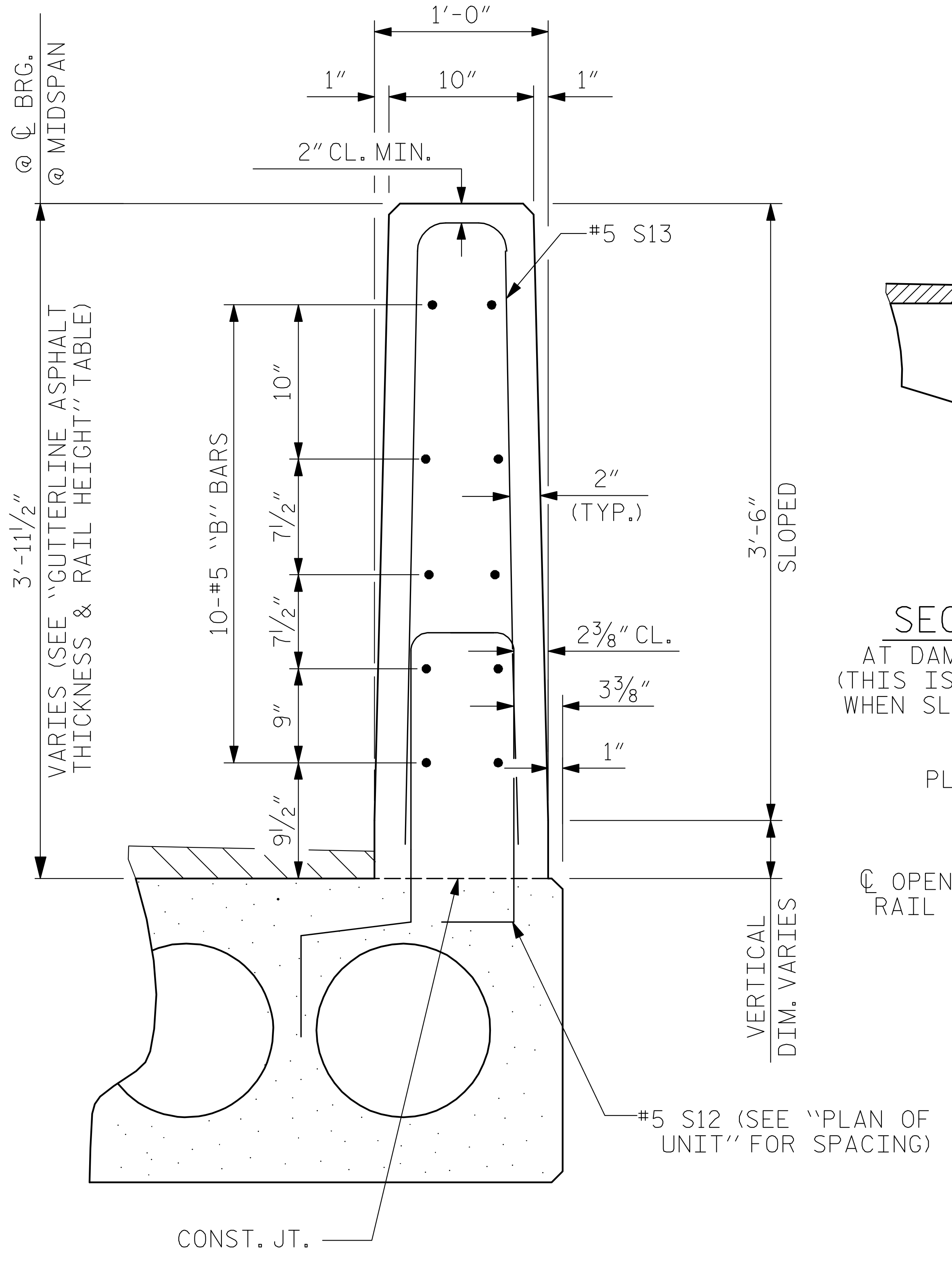
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

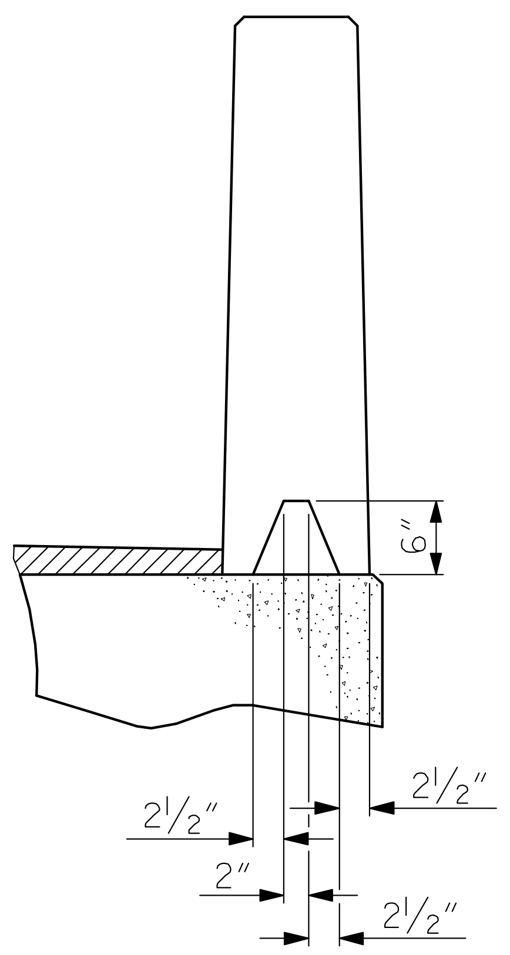
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	70' UNIT					
✳B25	60	60	#5	STR	22'-11"	1434
✳S13	158	158	#5	2	7'-2"	1181
✳EPOXY COATED REINFORCING STEEL				LBS.		2615
CLASS AA CONCRETE				CU.YDS.		18.9
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		140.25

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" × 2'-0"
70' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	4⁵⁄₁₆" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	¹³⁄₁₆" ↓
FINAL CAMBER	3½" ↑

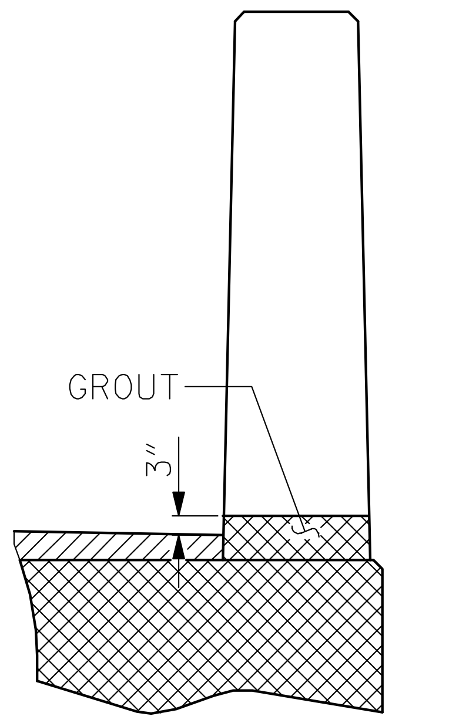
✳✳ INCLUDES FUTURE WEARING SURFACE



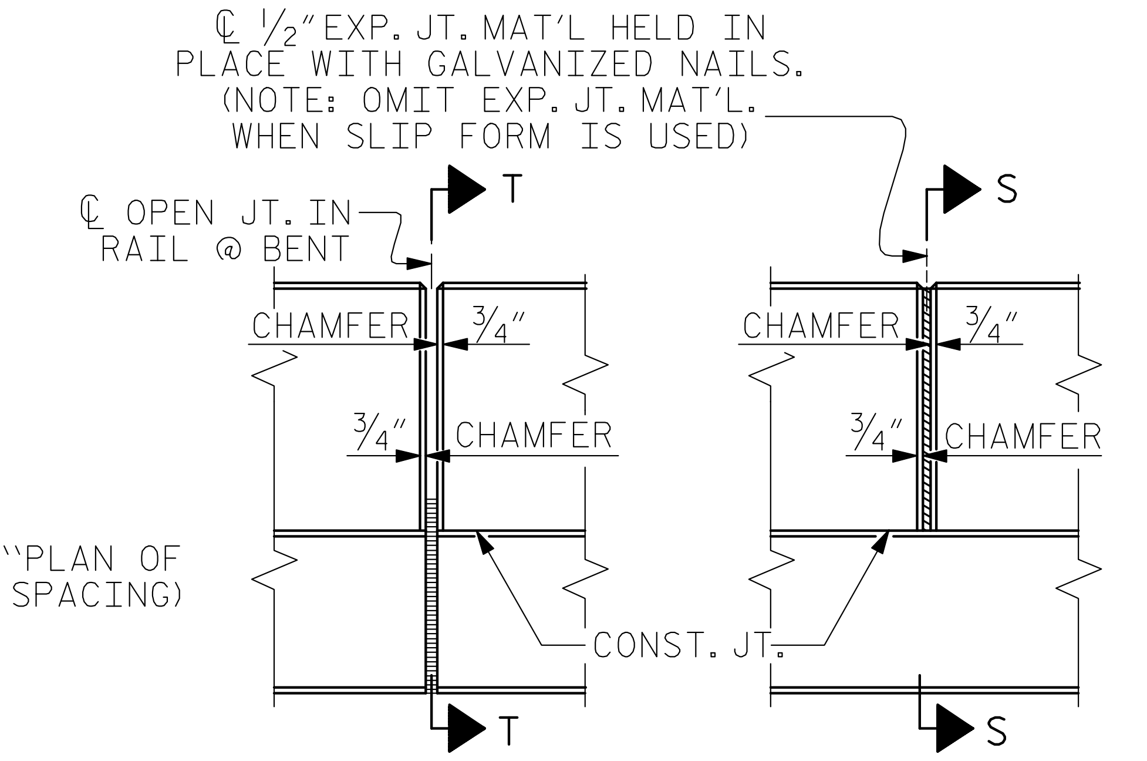
SECTION THRU RAIL



SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

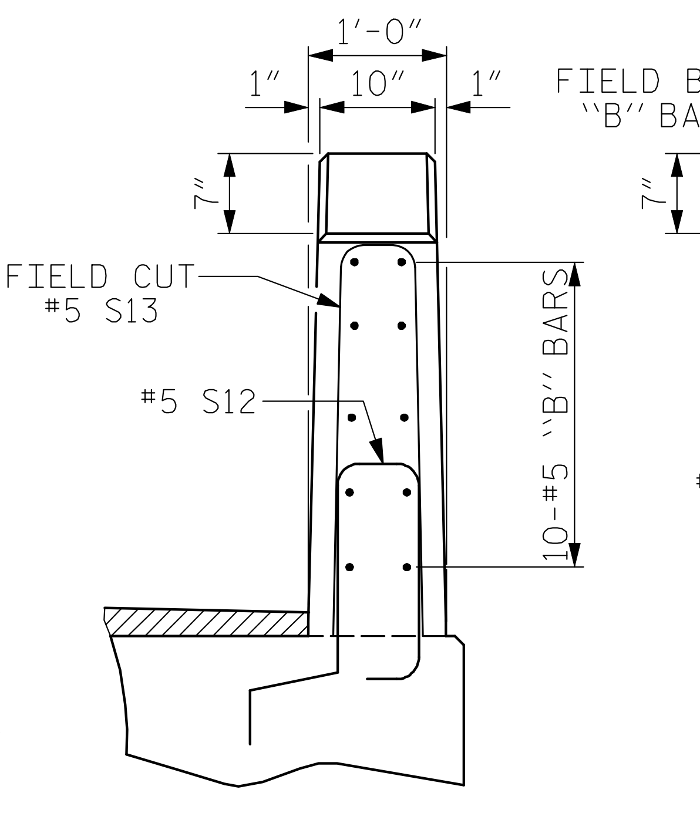


SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)

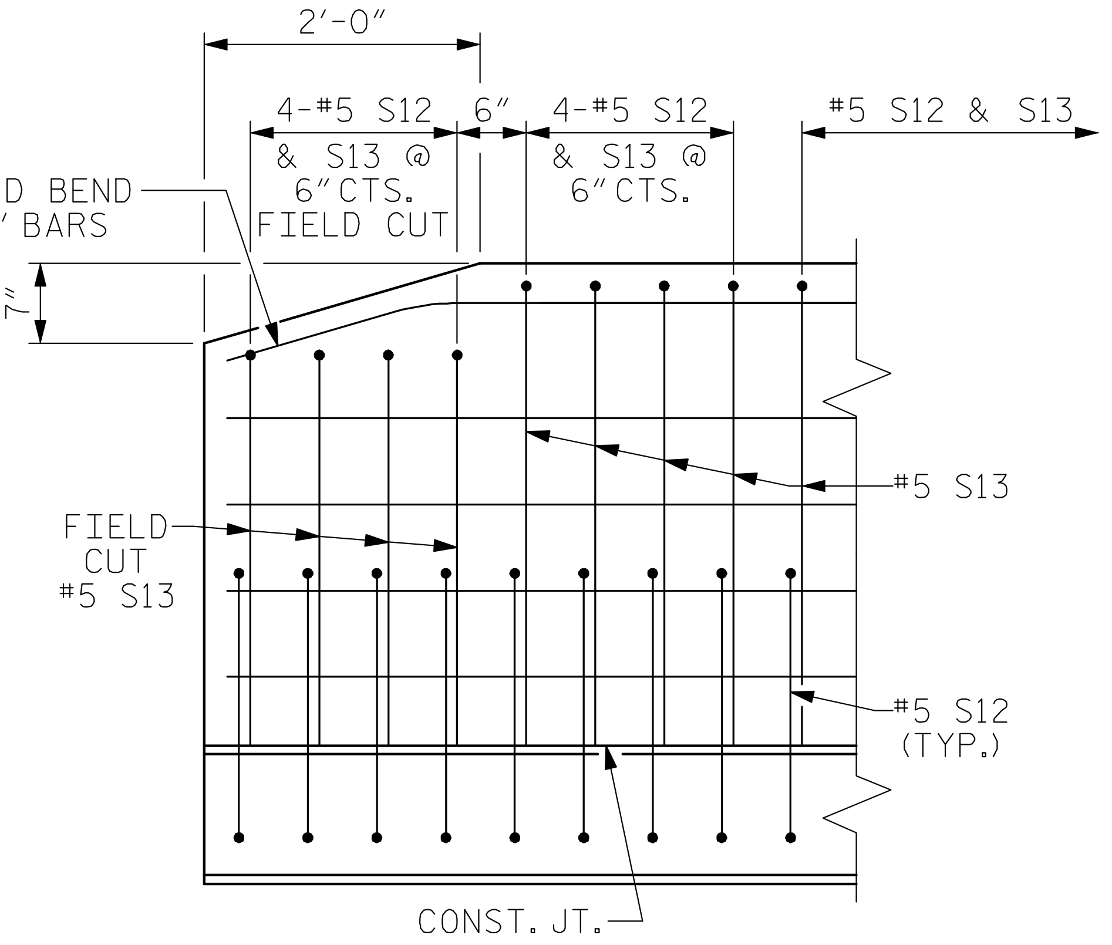


ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

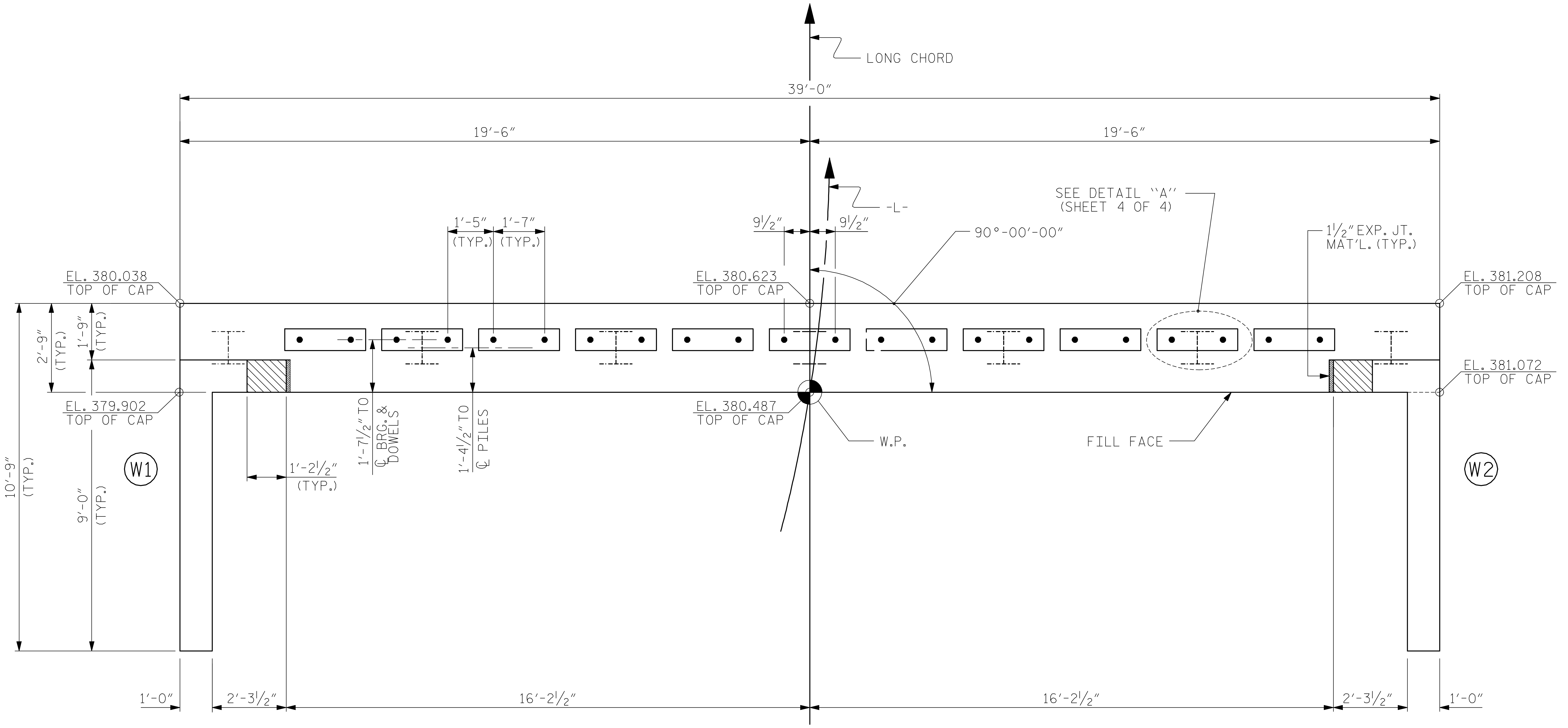
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			15

Jared C. Medlin
SEAL 032954
JARED C. MEDLIN
6-4-13

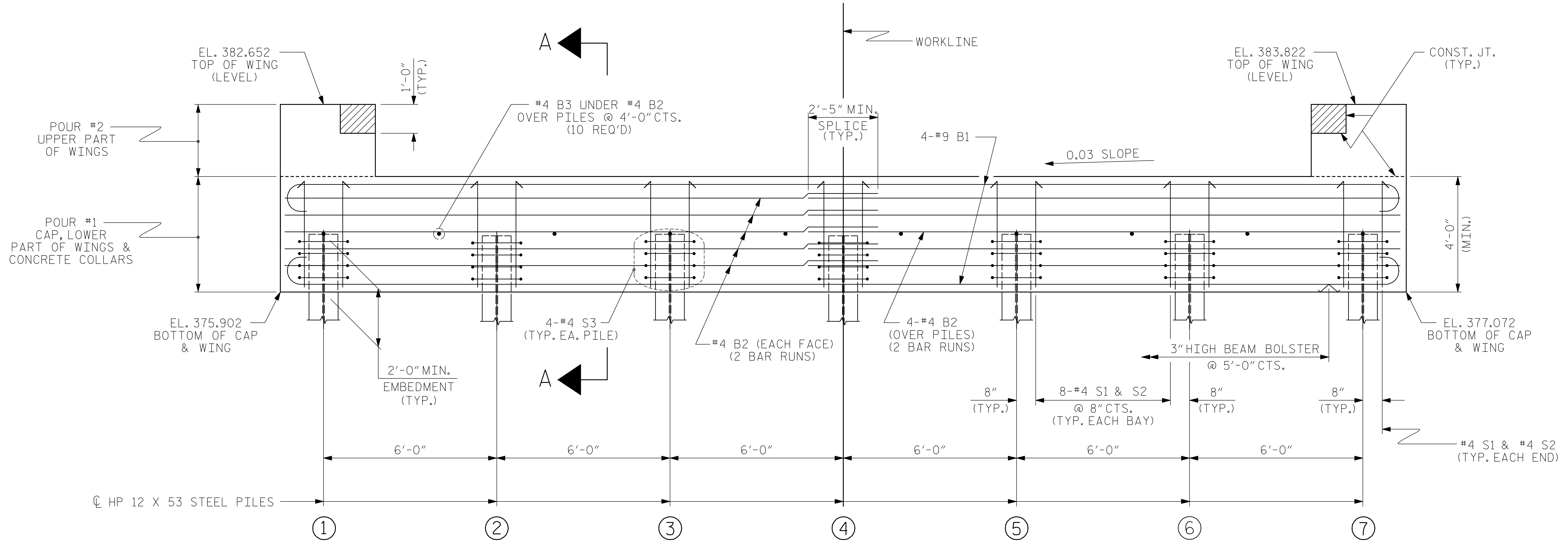
KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

ASSEMBLED BY :	DJD	DATE :	1/13
CHECKED BY :	JCM	DATE :	1/13
DRAWN BY : MAA	6/10	REV. 12/11	MAA/AAC
CHECKED BY : MKT	7/10		

STD. NO. 24PCS3_33_90S



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
①	377.947
②	378.127
③	378.307
④	378.487
⑤	378.667
⑥	378.847
⑦	379.027

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-10
TOTAL SHEETS 15

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KCI ASSOCIATES OF NC, P.A.
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NC LICENSE No. C-0764

Jared C. Medlin
SEAL 032954
JARED C. MEDLIN
6-4-13

ASSEMBLED BY : DJD DATE : 1/13
CHECKED BY : JCM DATE : 1/13
DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11

STD. NO. EB_33_90S4

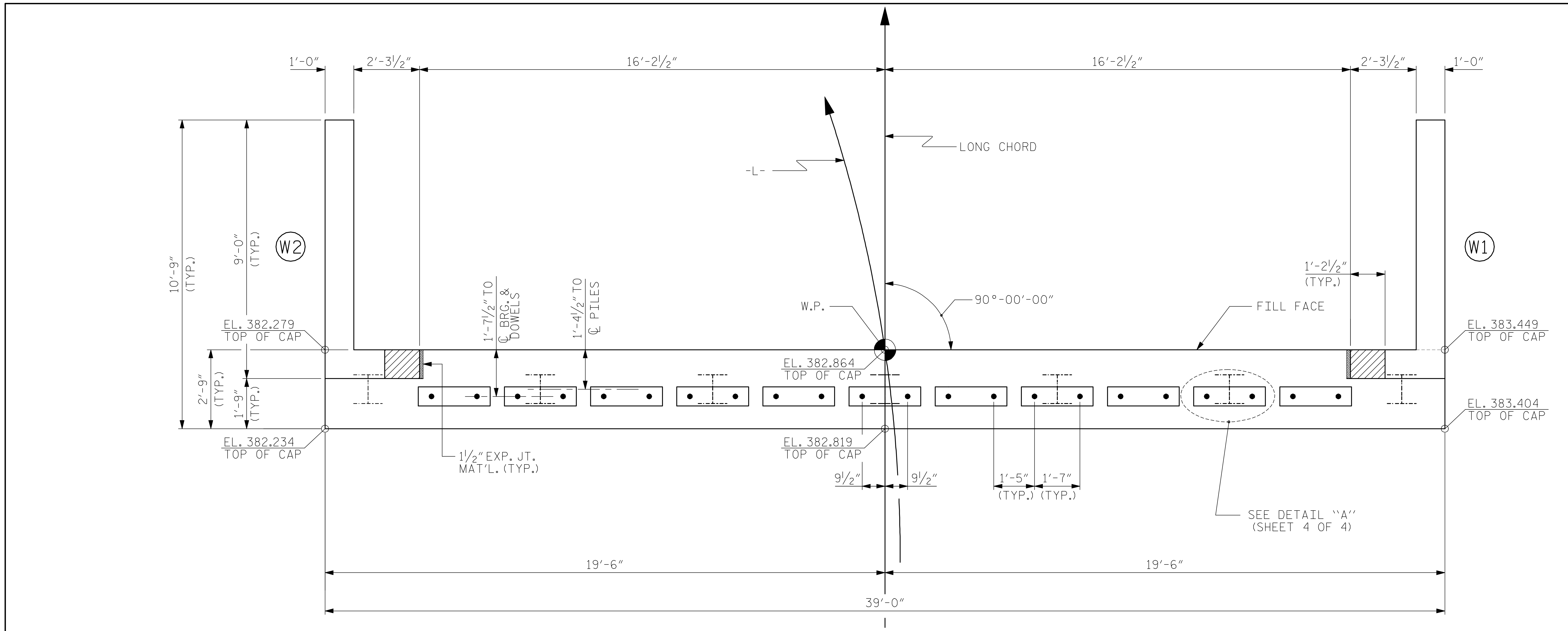
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

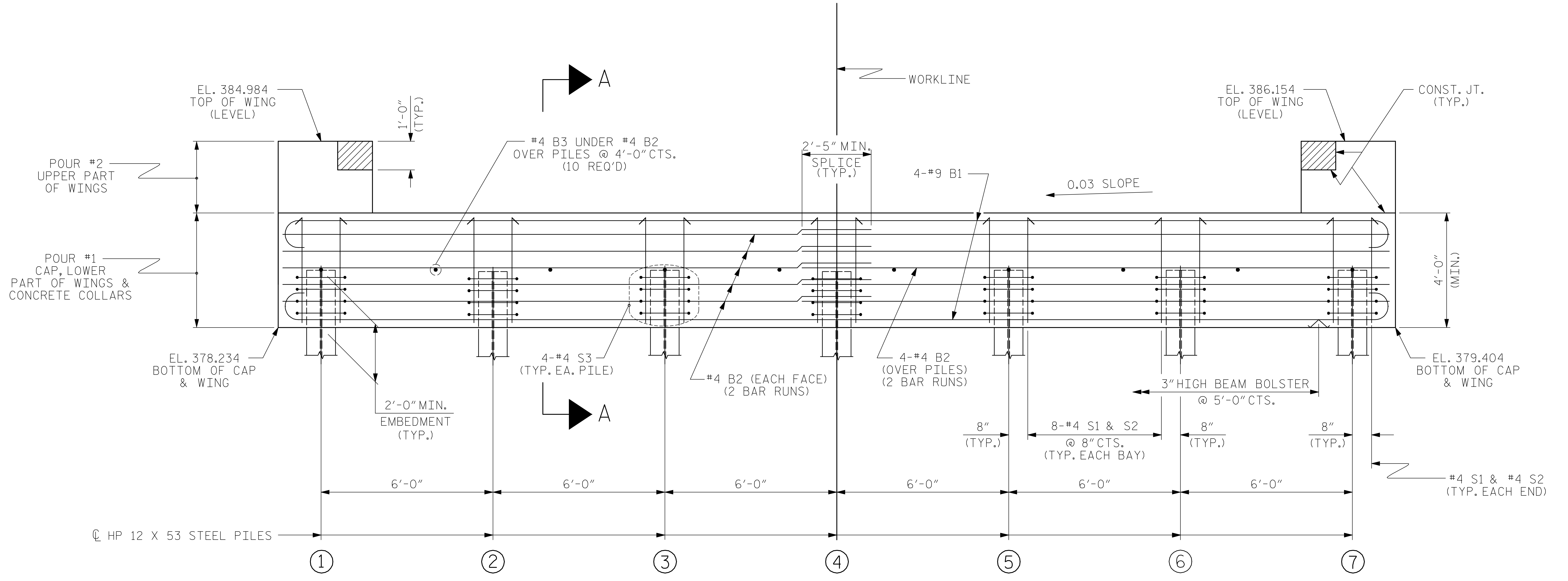
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

TOP OF PILE ELEVATIONS	
①	380.279
②	380.459
③	380.639
④	380.819
⑤	380.999
⑥	381.179
⑦	381.359

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-11
TOTAL SHEETS 15

SEAL 032954
JARED C. MEDLIN
6-4-13

KCI ASSOCIATES OF NC, P.A.
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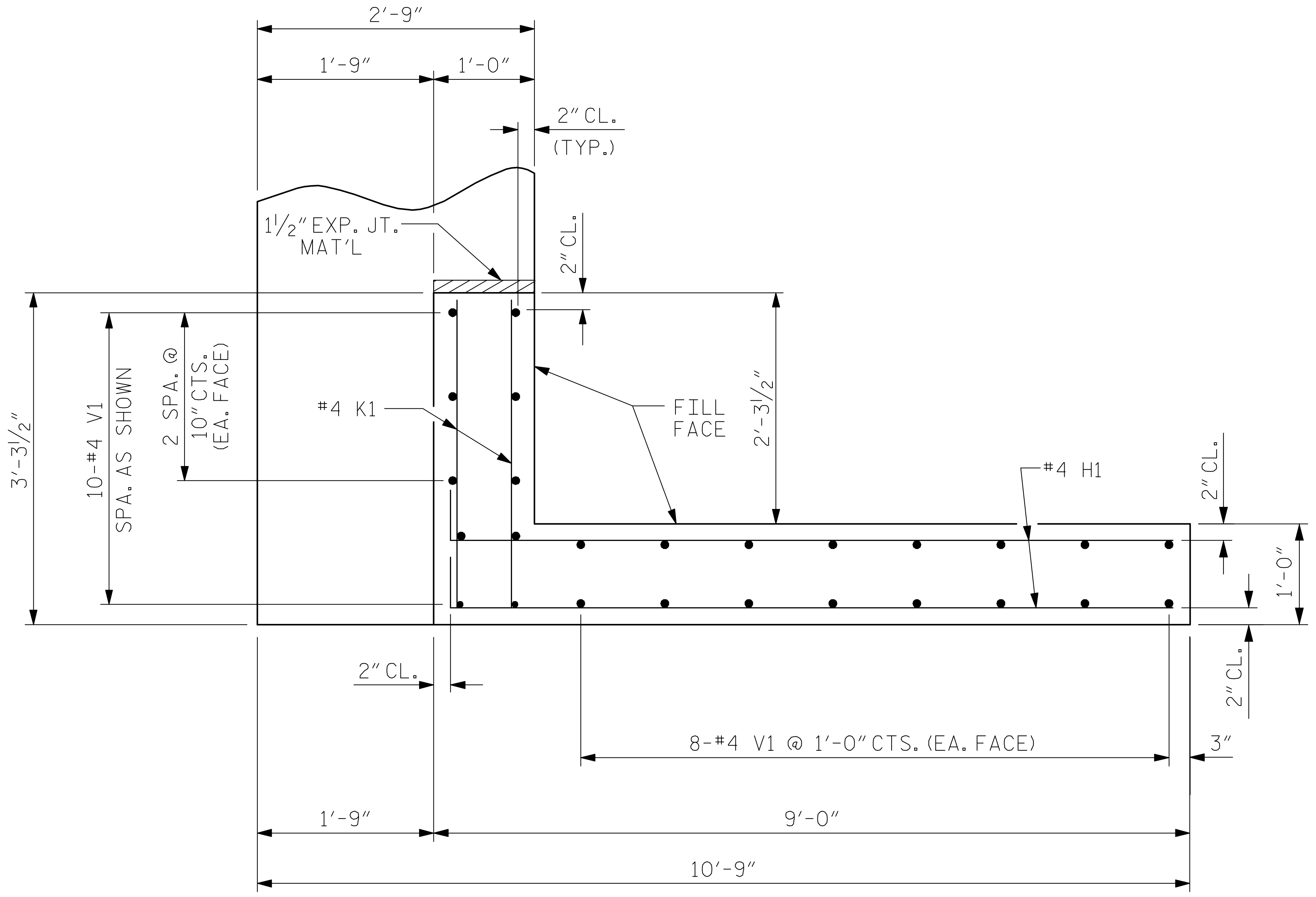
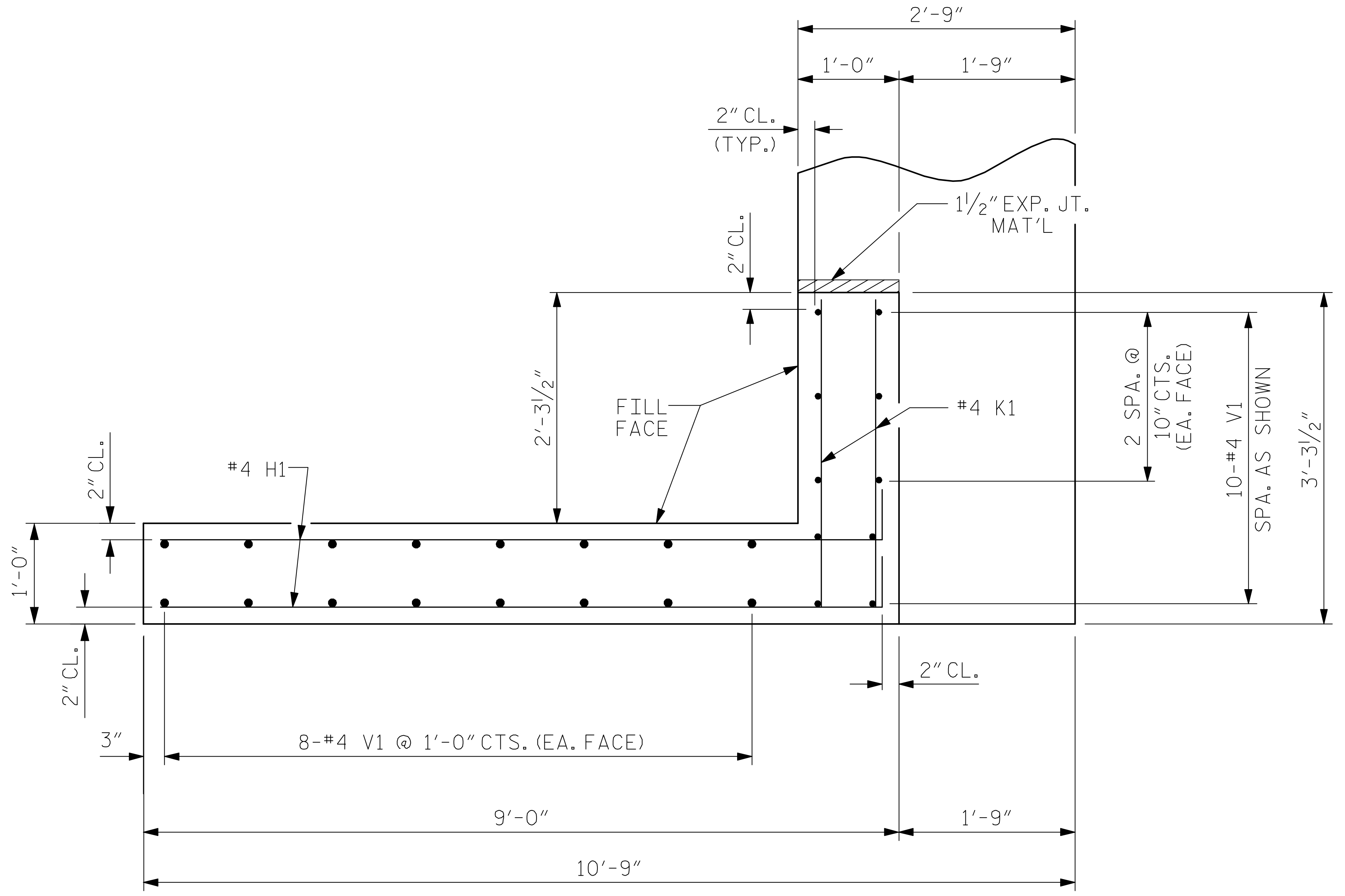
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

ASSEMBLED BY :	DJD	DATE :	1/13
CHECKED BY :	JCM	DATE :	1/13
DRAWN BY :	WJH	12/11	
CHECKED BY :	AAC	12/11	

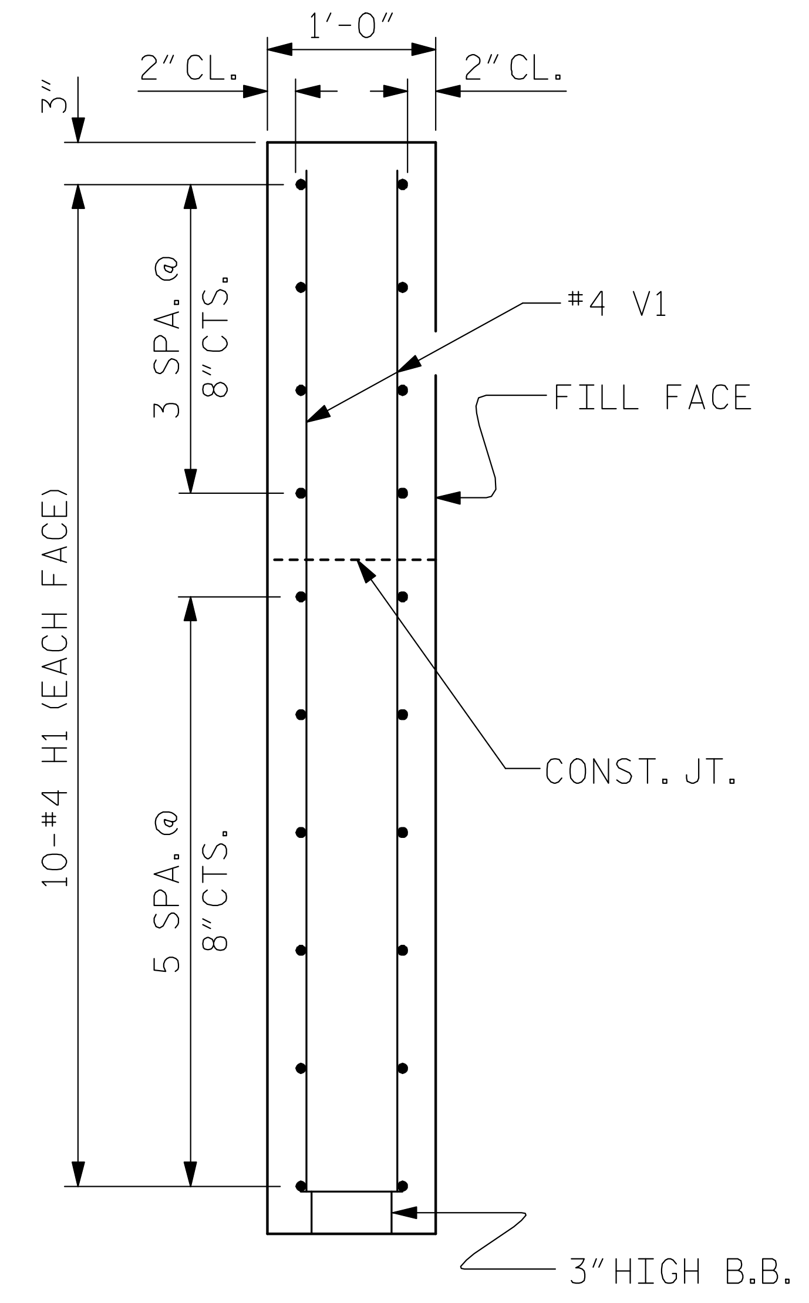
STD. NO. EB_33_90S4



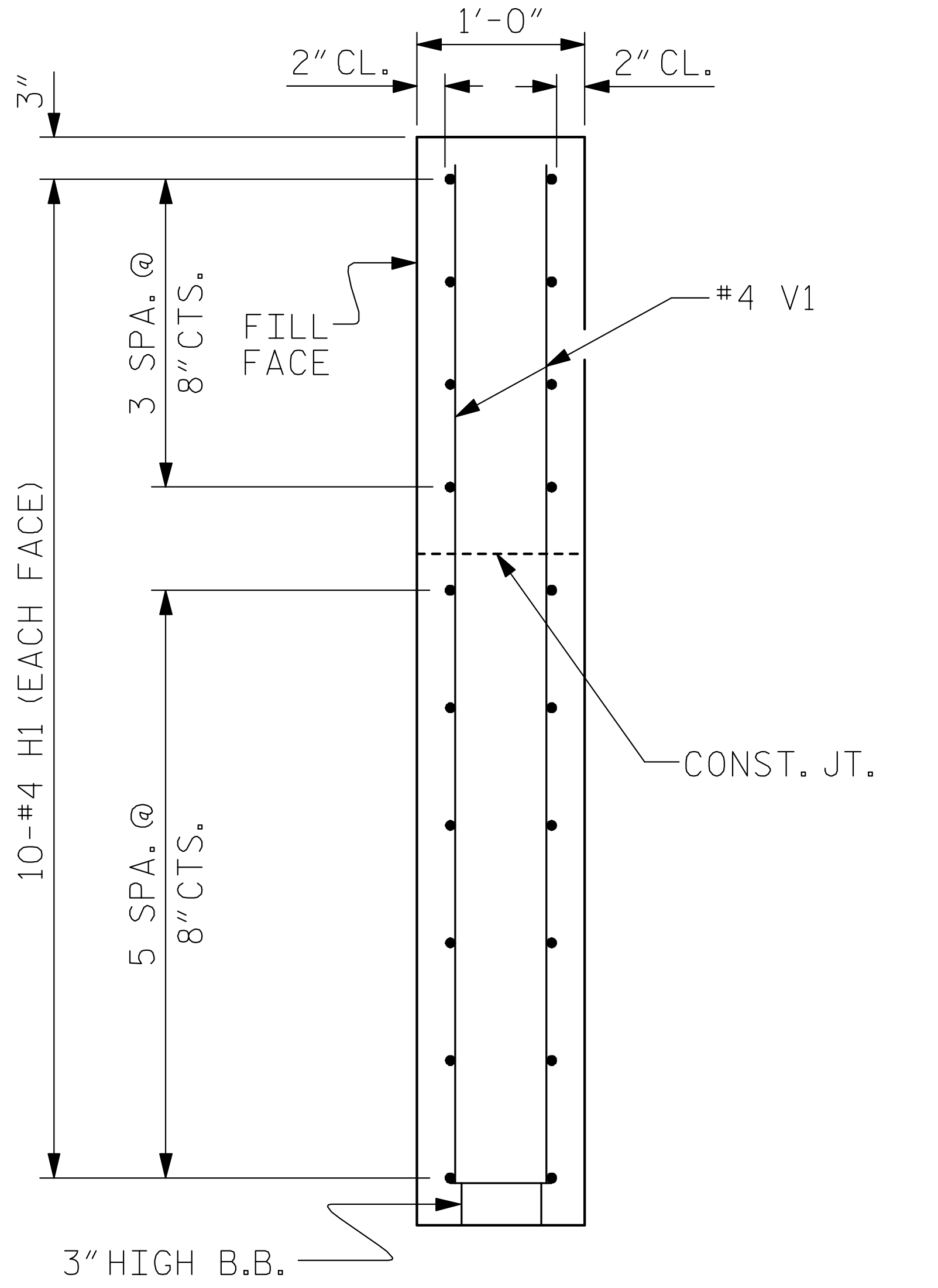
PLAN OF WING (W1)



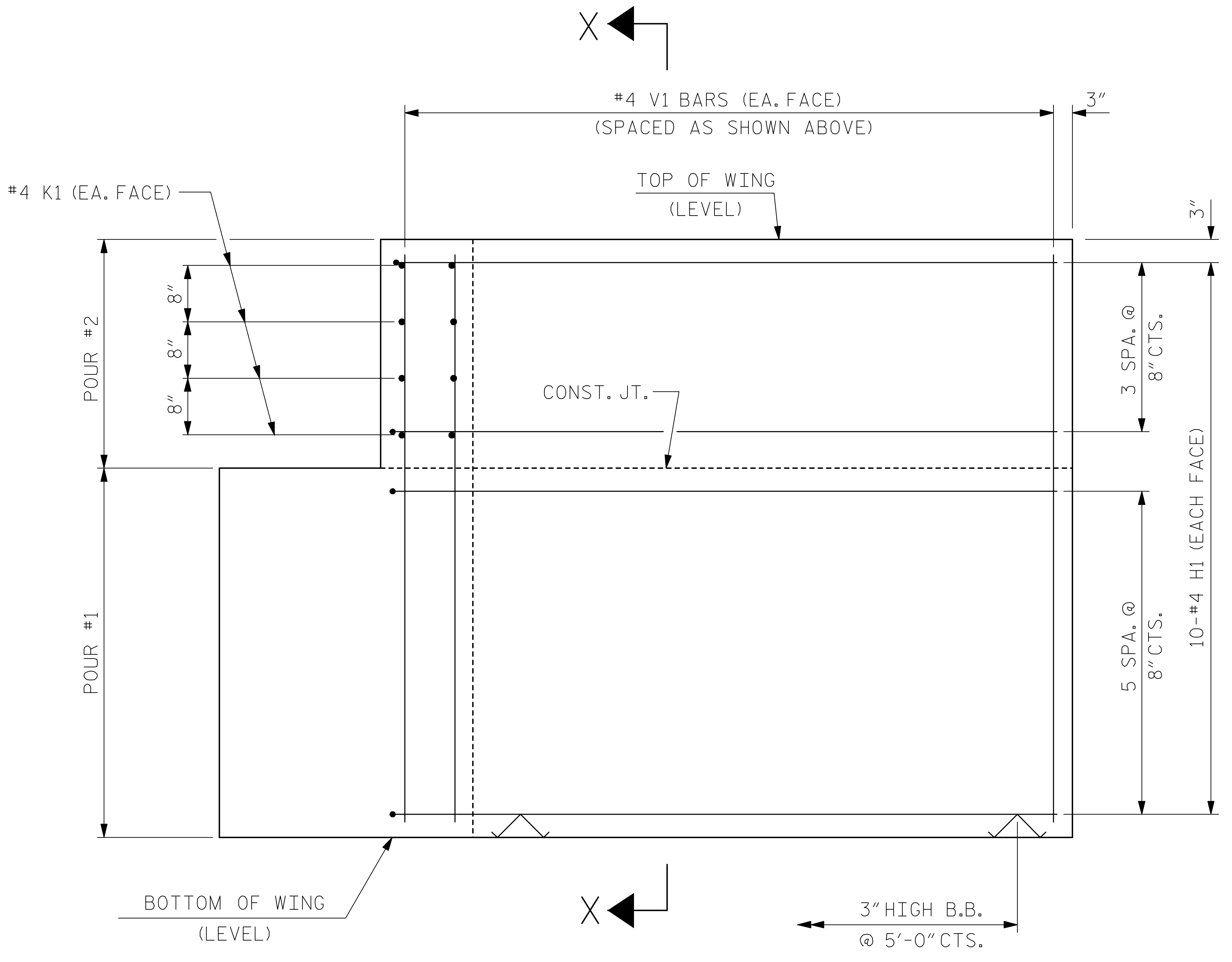
PLAN OF WING (W2)



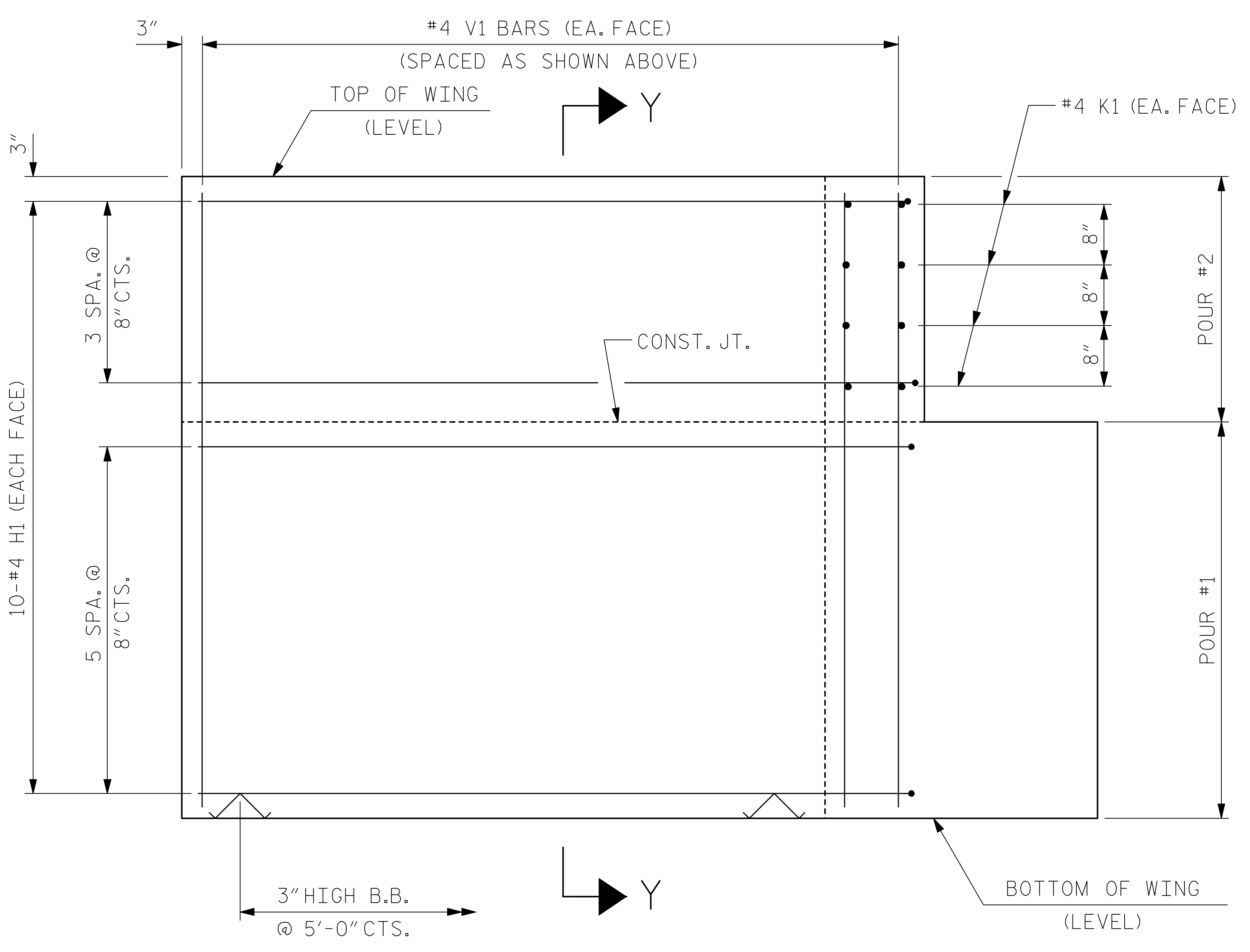
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT WING DETAILS

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-12
TOTAL SHEETS 15

ASSEMBLED BY : DJD DATE : 1/13
CHECKED BY : JCM DATE : 1/13

DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11

KCI
ASSOCIATES OF NC

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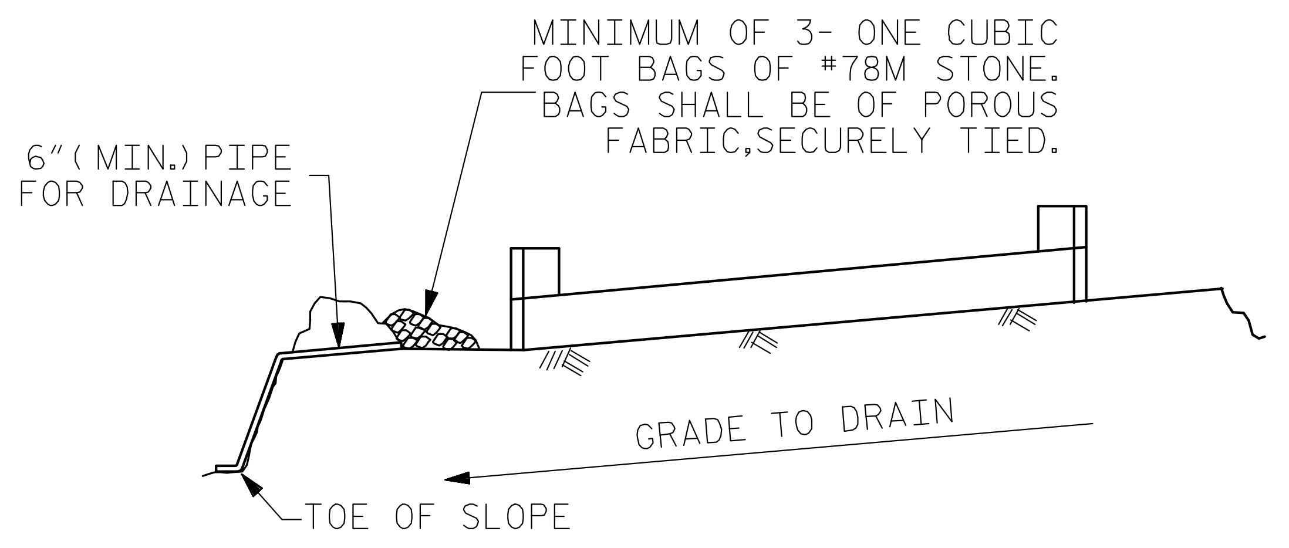
704-499-9452
NC LICENSE No. C-0764

SEAL 032954
JARED C. MEDLIN
6-4-13

STD. NO. EB_33_90S4

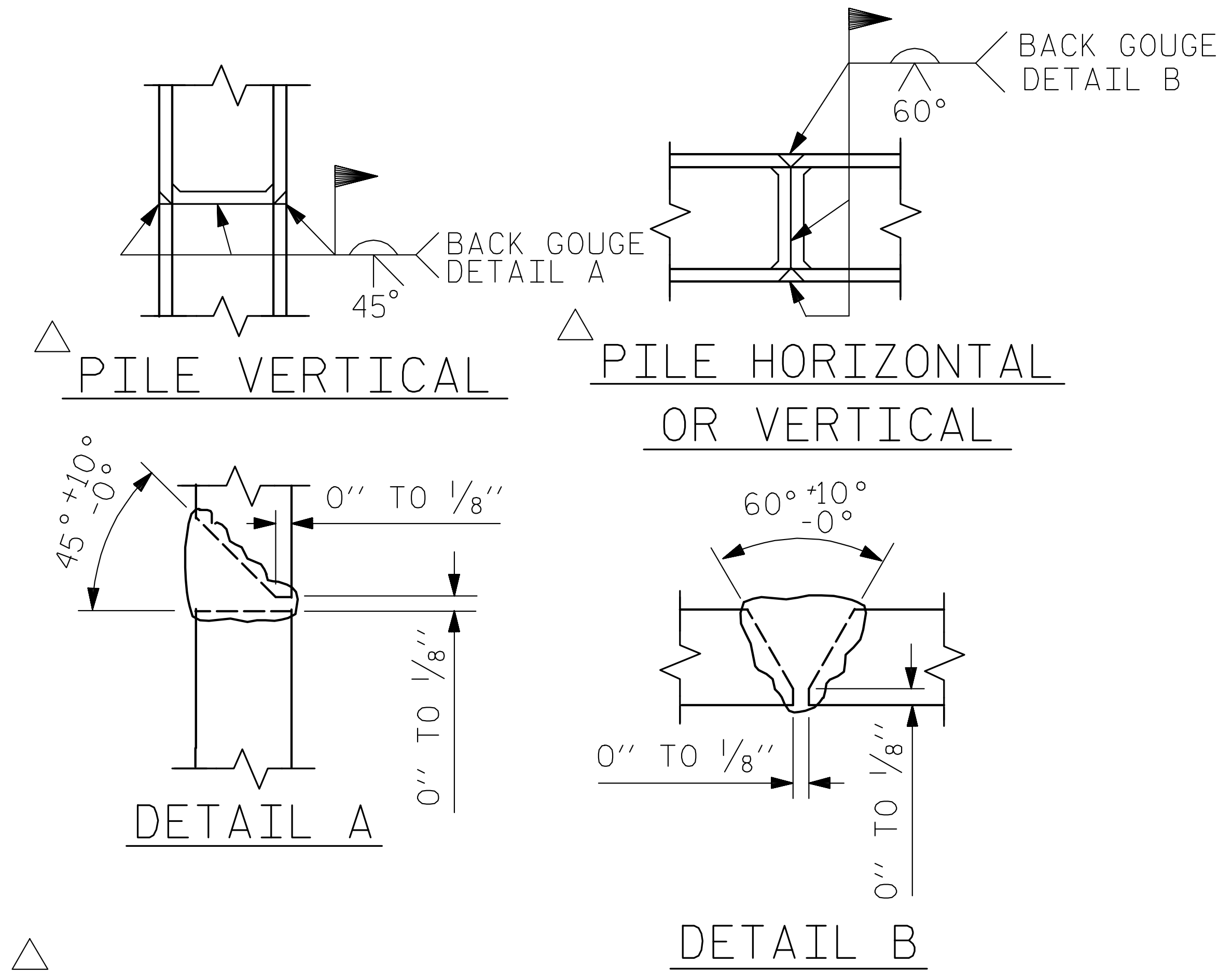


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

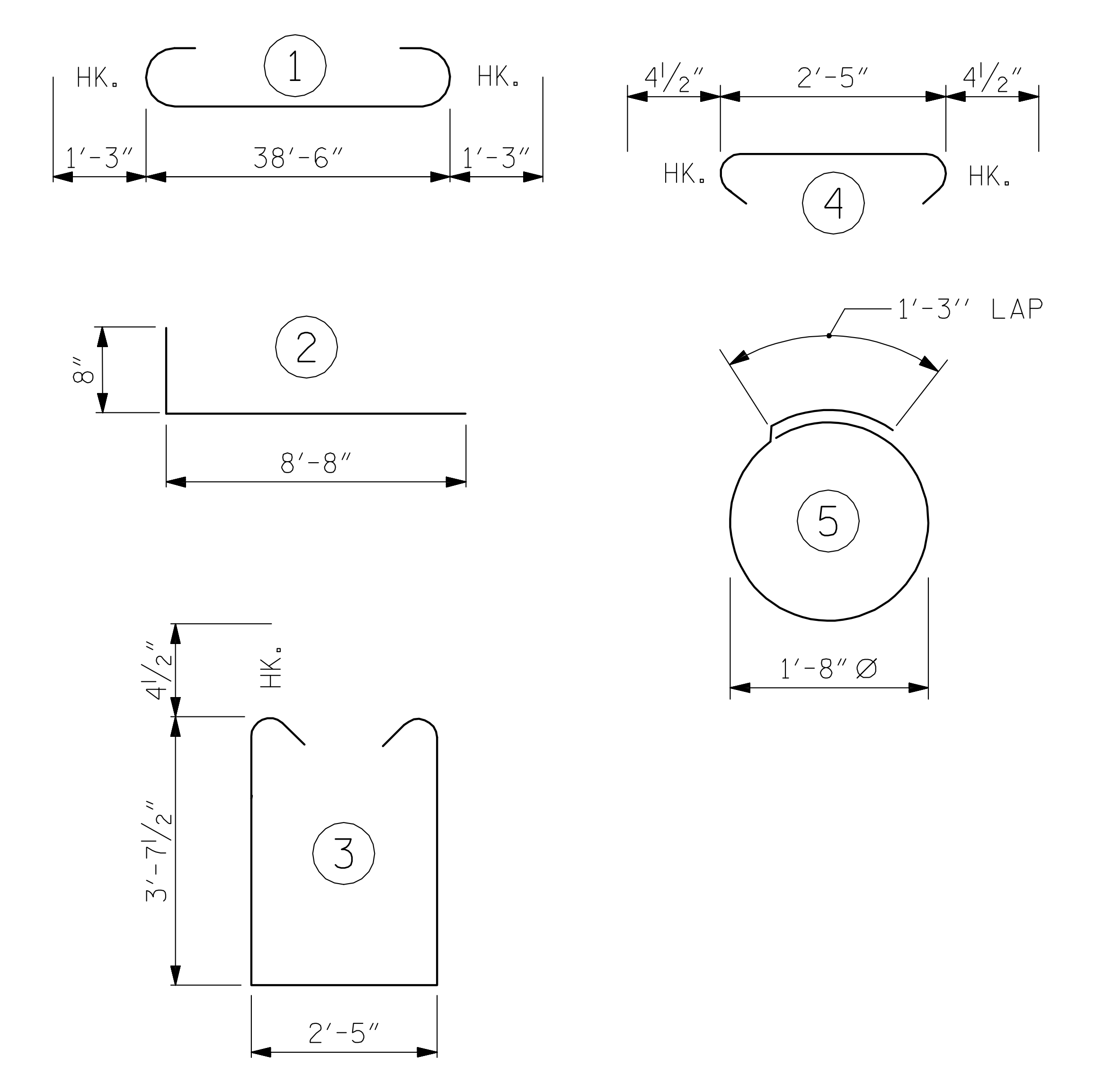
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 7 LIN. FT.= 91.0	NO: 7 LIN. FT.= 91.0

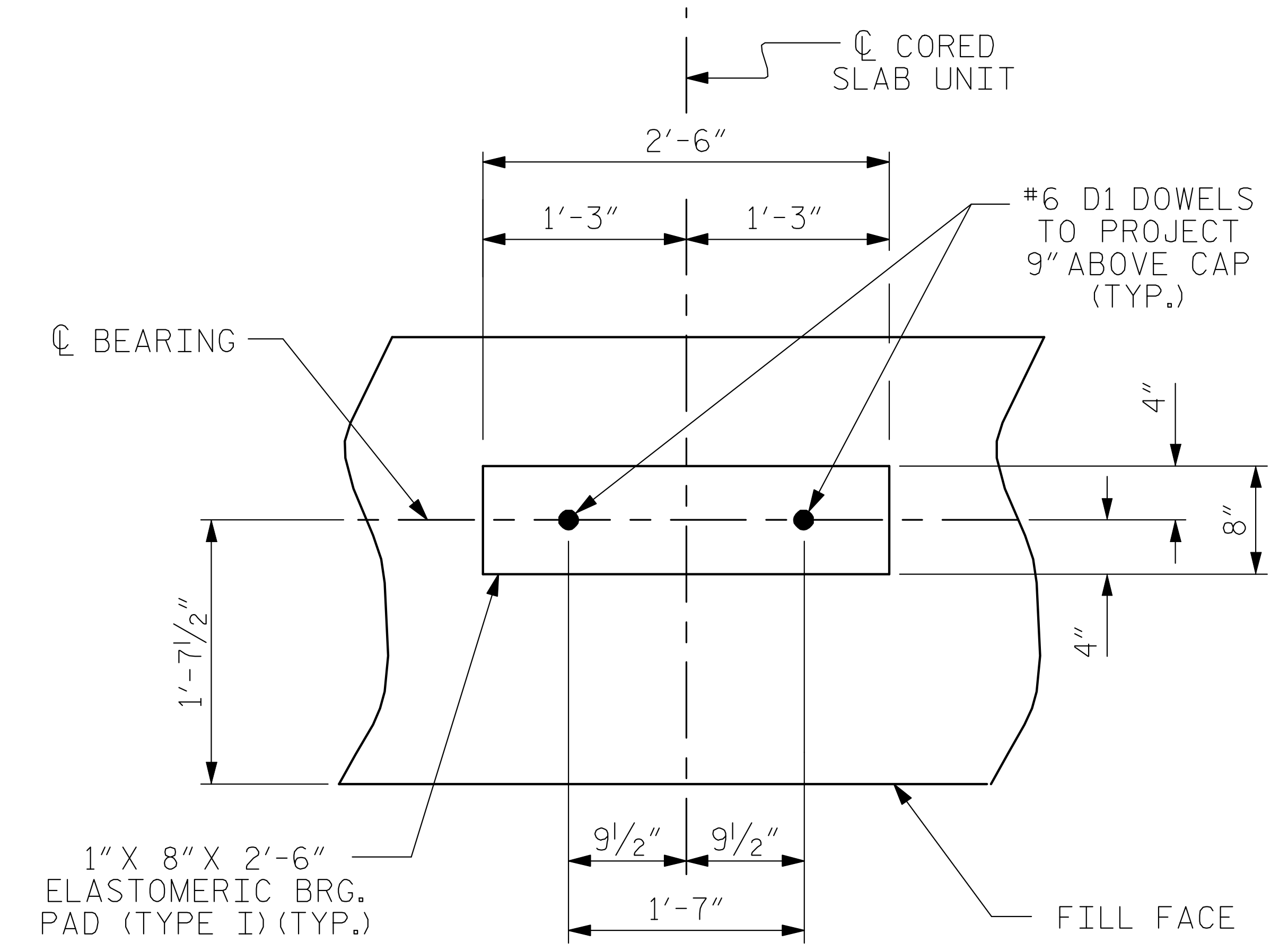
BILL OF MATERIAL
FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	28	#4	STR	20'-7"	385
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	50	#4	3	10'-5"	348
S2	50	#4	4	3'-2"	106
S3	28	#4	5	6'-6"	122
V1	52	#4	STR	6'-2"	214

REINFORCING STEEL
(FOR ONE END BENT) 2636 LBS.

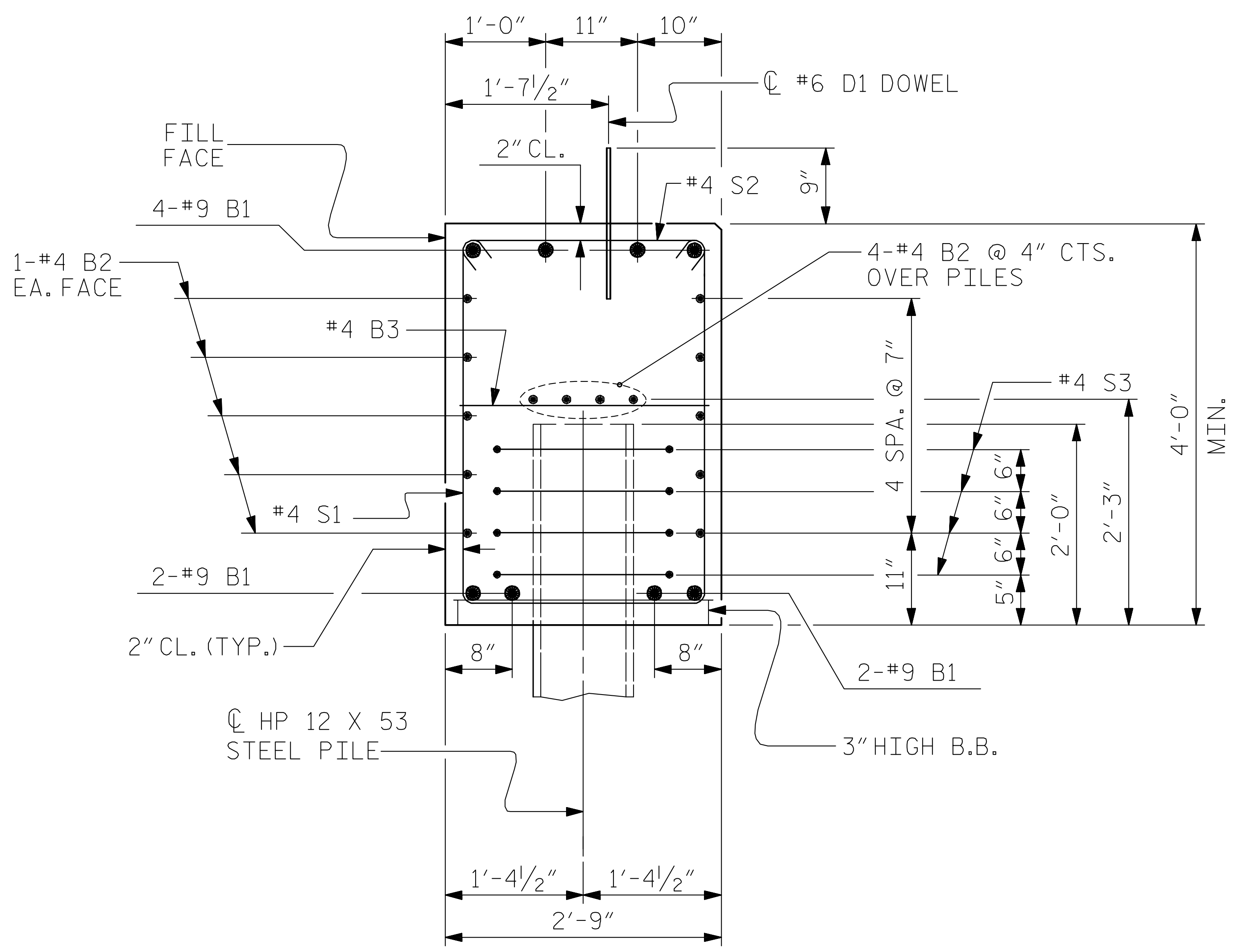
CLASS A CONCRETE BREAKDOWN
(FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	19.5 C.Y.
POUR #2	UPPER PART OF WINGS	2.3 C.Y.
TOTAL CLASS A CONCRETE		21.8 C.Y.



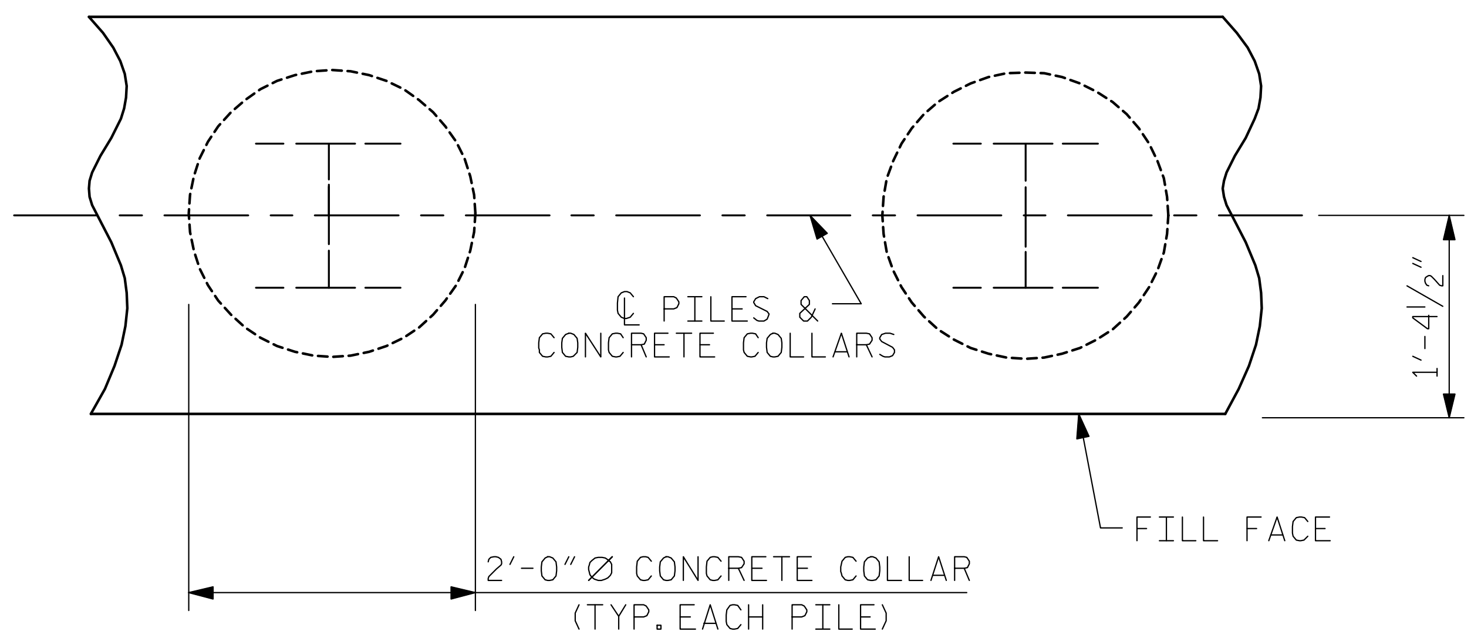
DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

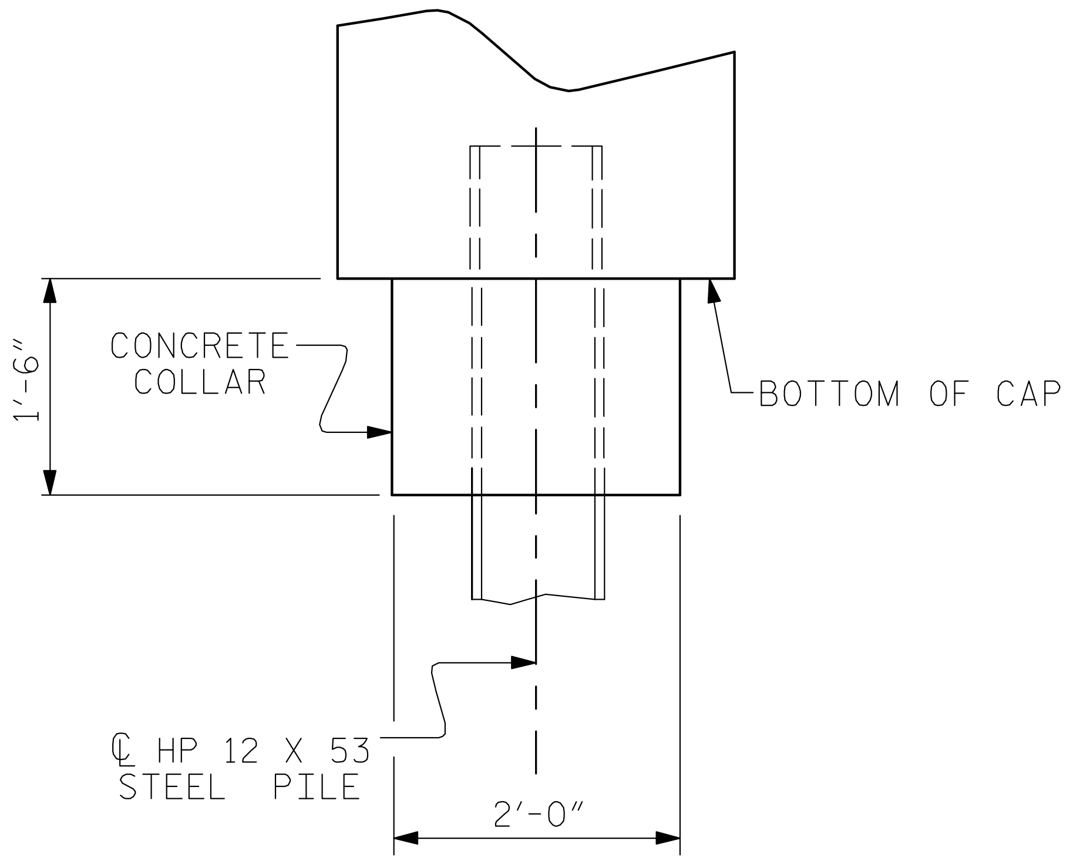


SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")
(CAP SLOPE NOT SHOWN)



PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2
DETAILS

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

Jared C. Medlin
SEAL 032954
6-4-13

ASSEMBLED BY :	DJD	DATE :	1/13
CHECKED BY :	JCM	DATE :	1/13
DRAWN BY :	WJH	12/11	
CHECKED BY :	AAC	12/11	

REVISIONS

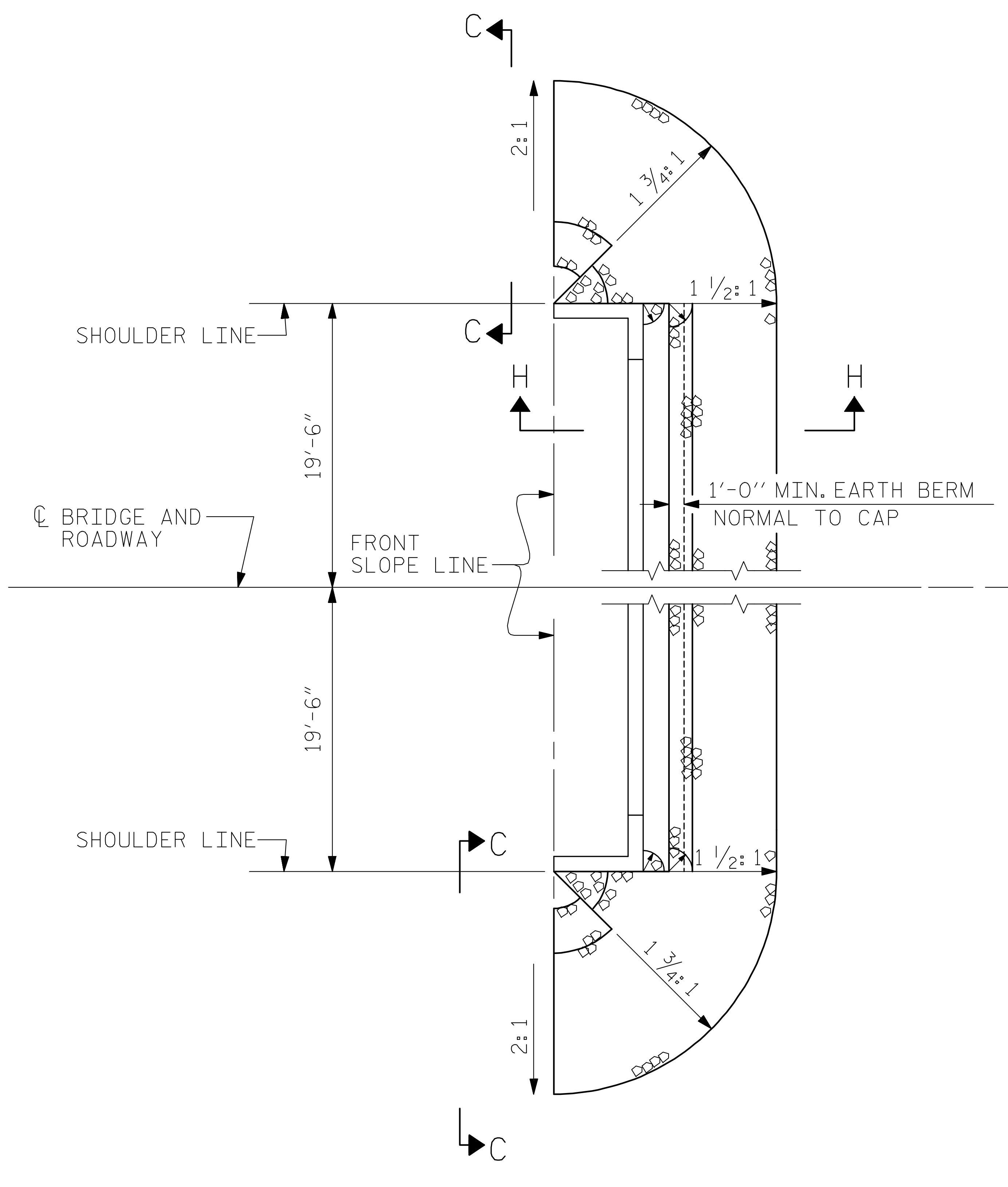
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-13
TOTAL SHEETS 15

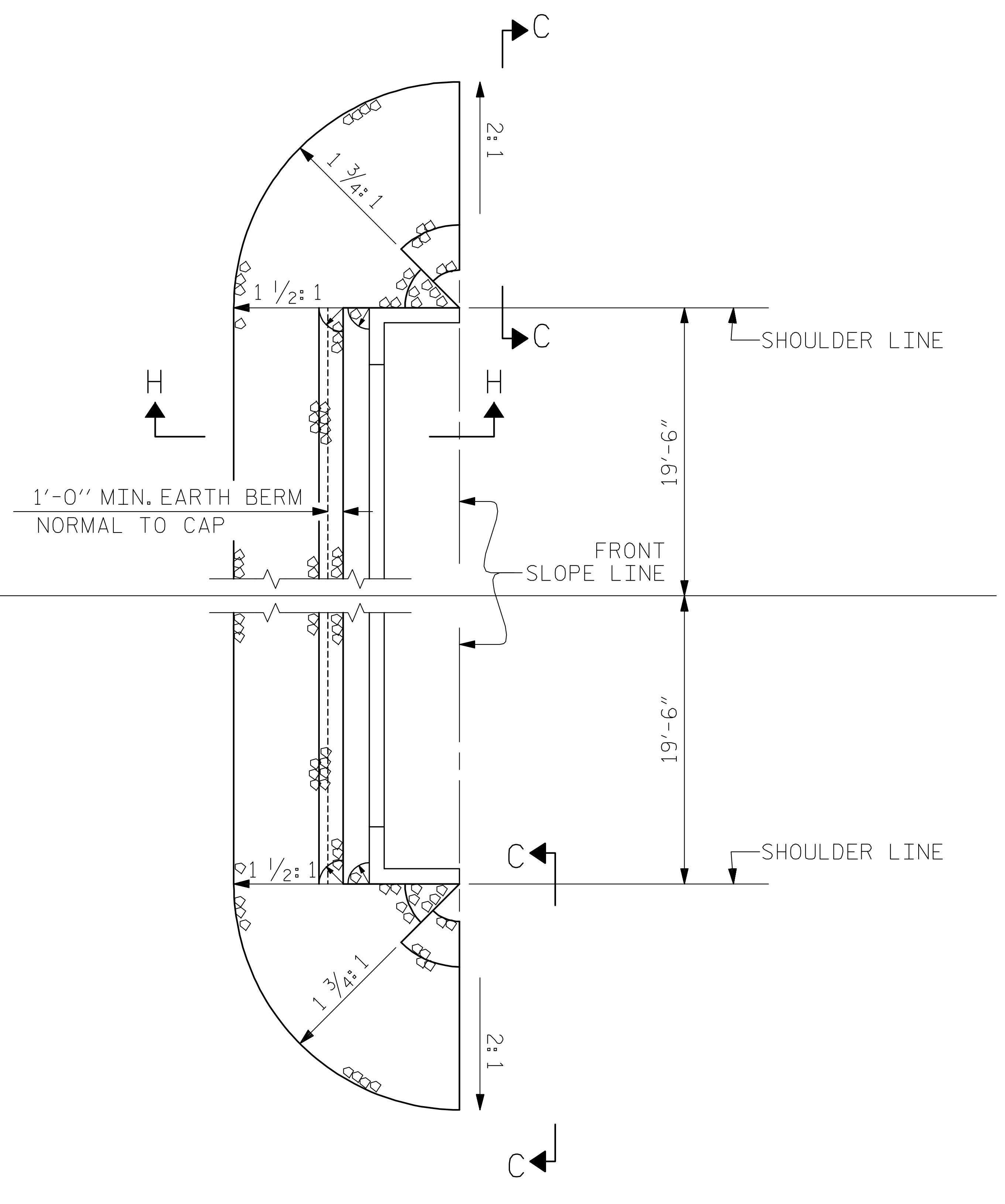
STD. NO. EB_33_90S4

NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

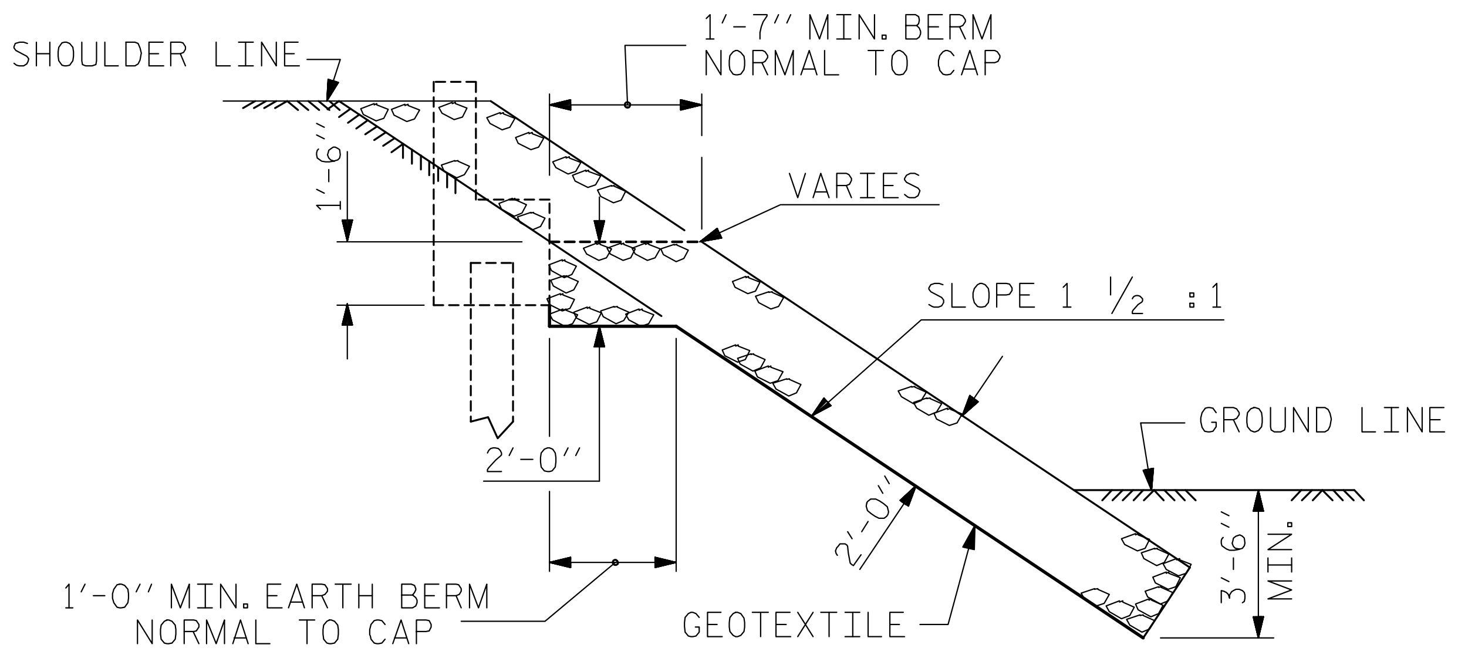


END BENT 1

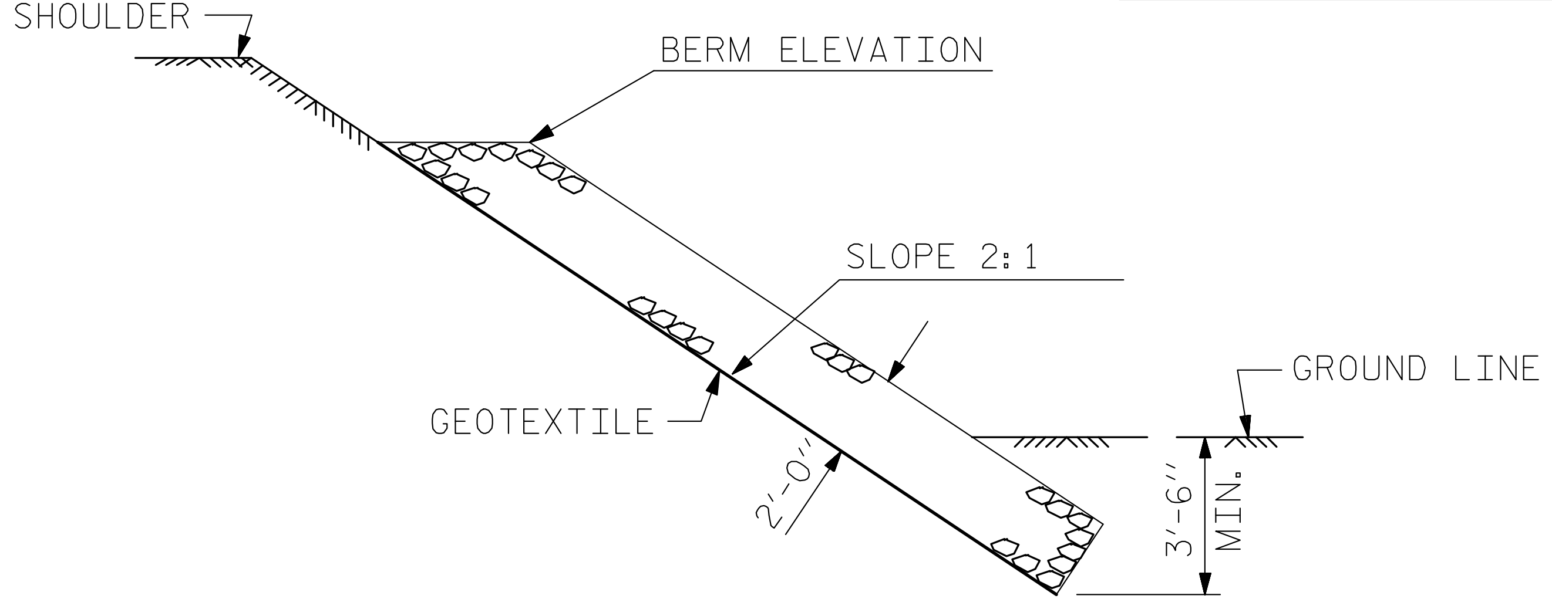


END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+20.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	60.1	66.8
END BENT 2	71.8	79.8



SECTION H-H



SECTION C-C

PROJECT NO. 17BP.8.R.23

RANDOLPH COUNTY

STATION: 13+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

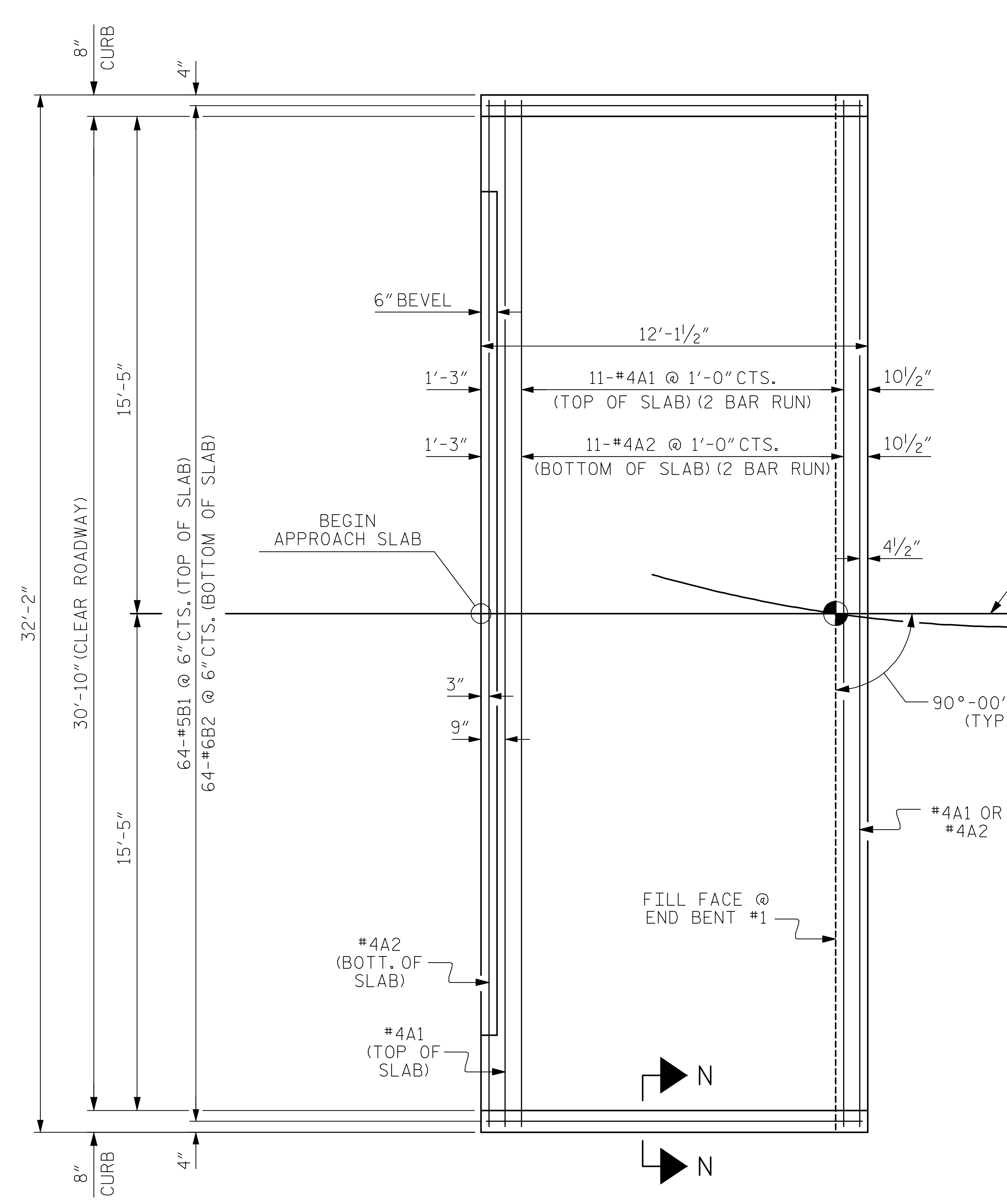
KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

SEAL 032954
JARED C. MEDLIN
6-4-13

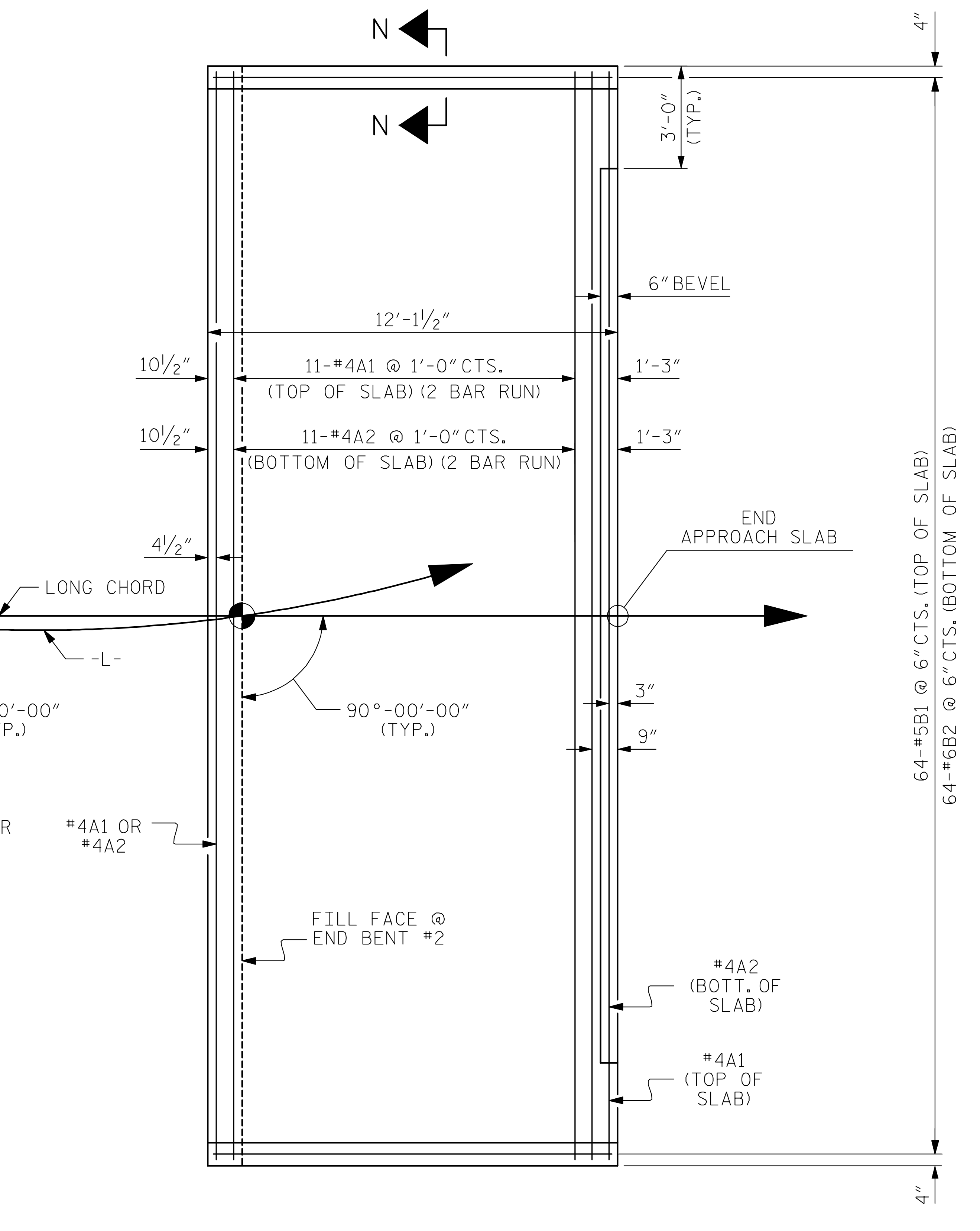
ASSEMBLED BY : JCM			DATE : 08/12		
CHECKED BY : JDF			DATE : 08/12		
DRAWN BY : REK	1/84	REV. 5/1/06R	TLA/GM		
CHECKED BY : RDU	1/84	REV. 10/1/11	MAA/GM		
		REV. 12/21/11	MAA/GM		

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			15

STD. NO. RR2

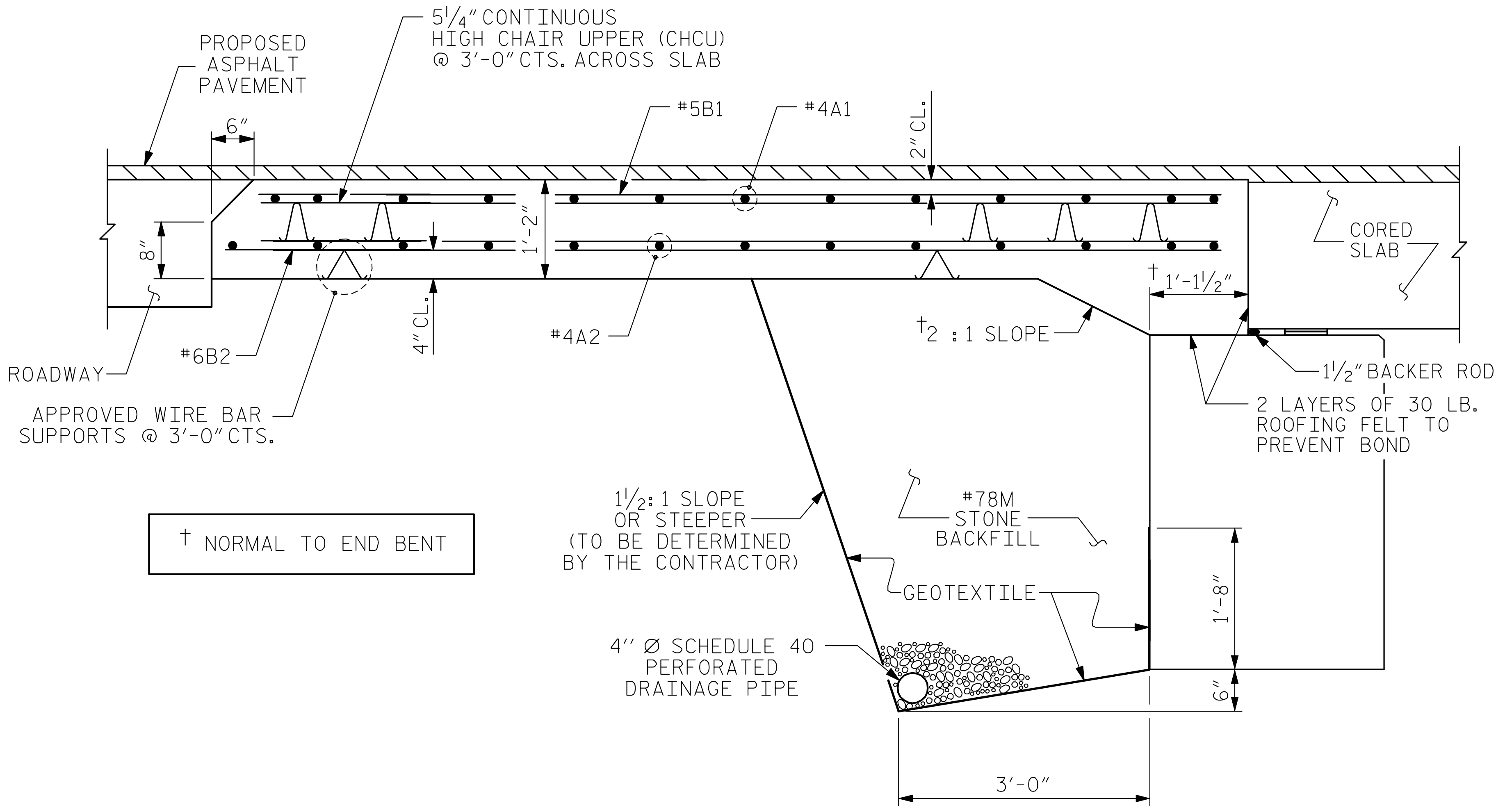


PLAN @ END BENT #1



PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

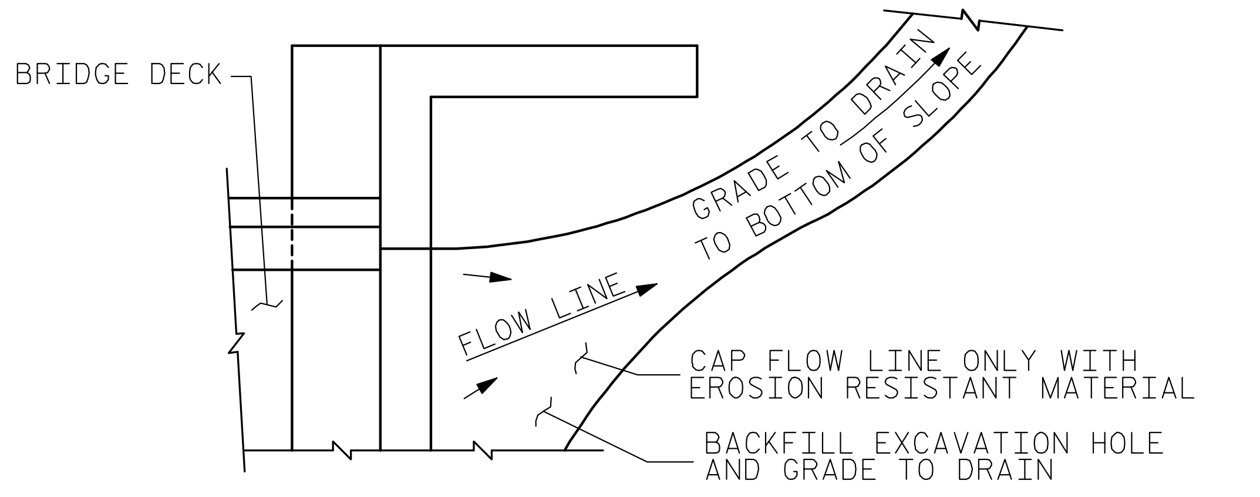
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

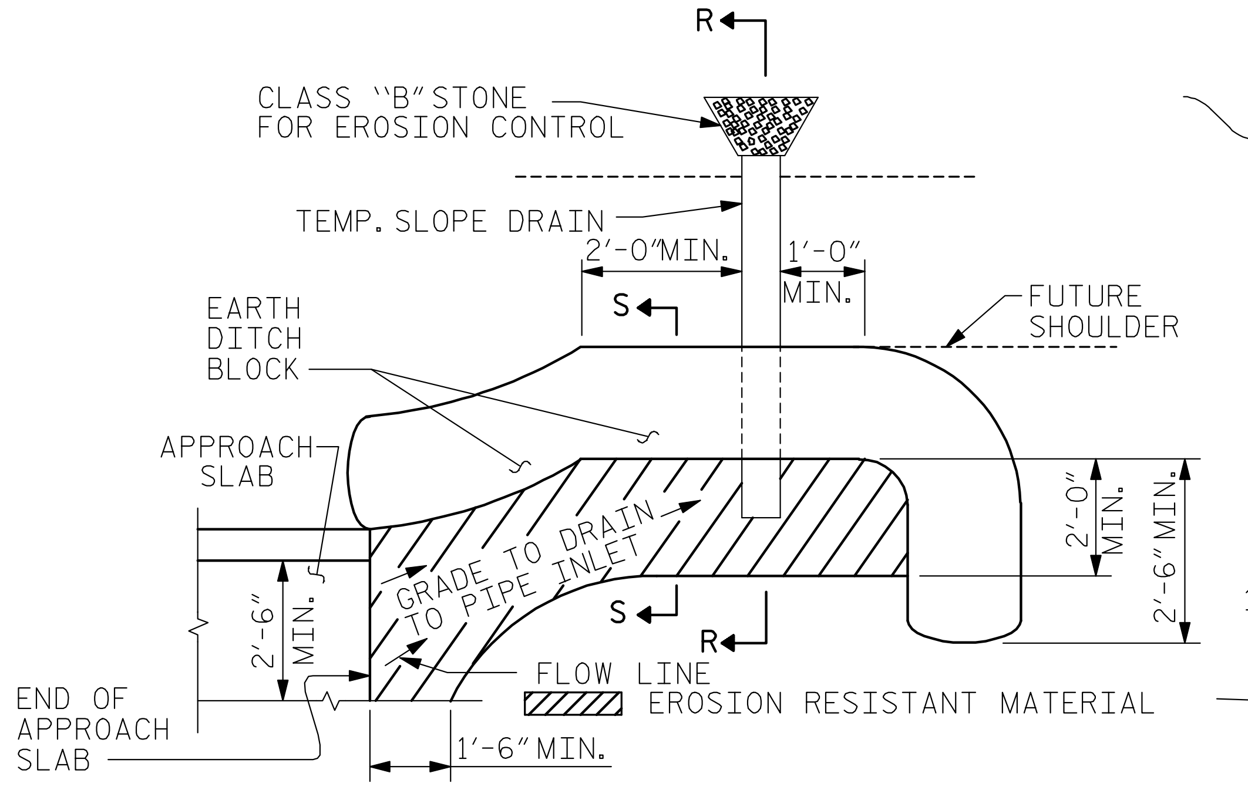
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



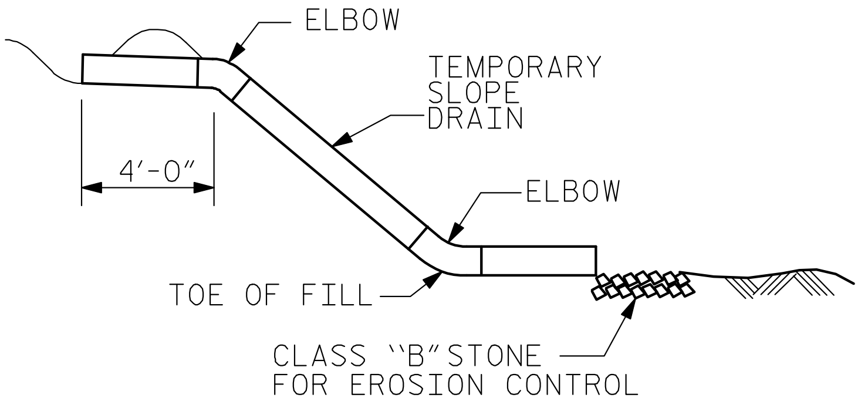
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

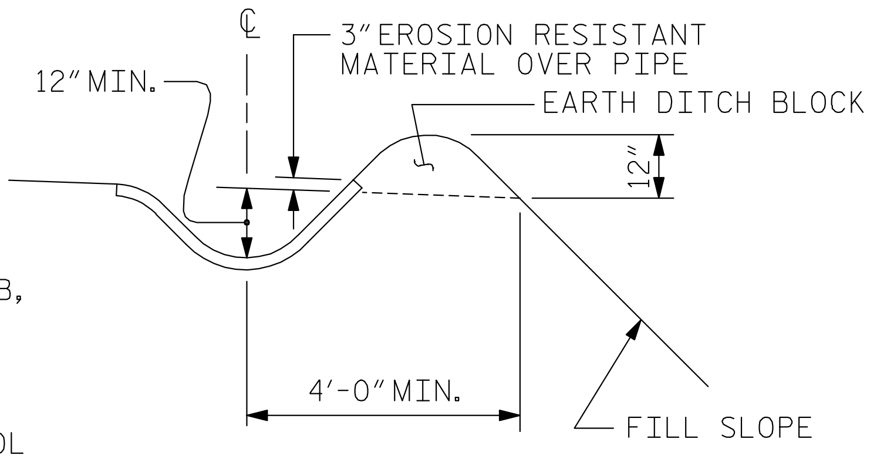


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW



SECTION R-R

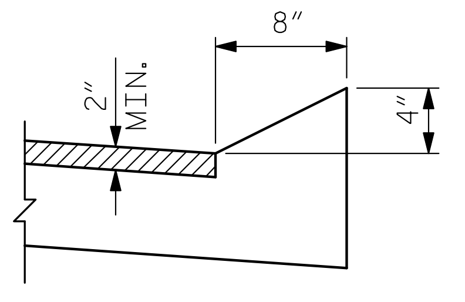


SECTION S-S

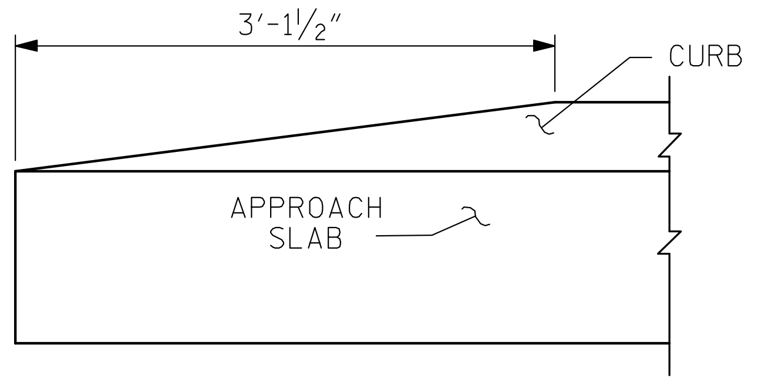
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
✳ B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
✳ EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	19.9
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
✳ B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
✳ EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C. Y.	19.9

PROJECT NO. 17BP.8.R.23
RANDOLPH COUNTY
STATION: 13+20.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

KCI
ASSOCIATES OF NC

Jared C. Medlin
SEAL
032954
JARED C. MEDLIN
6-4-13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY : DJD DATE : 1/13
CHECKED BY : JCM DATE : 1/13
DRAWN BY : SHS/MAA 5-09
CHECKED BY : BCH 5-09
REV. 12-11 MAA/AAC

STD. NO. BAS_33_90S

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 ``STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH
JANUARY, 1990

REV. 6-16-95 EEM (W) RGW REV. 5-7-03 RWW (W) JTE REV. 10-1-11 MAA (W) GM
REV. 8-16-99 RWW (W) LES REV. 5-1-06 TLA (W) GM

STD. NO. SN